CS1013 Programming Project
Exercise 3

For this lab you may wish to download some files from the CS1013 module on blackboard. It includes:
- Outlines for the main program.
- Outline of the Alien class.
- exploding.gif and spacer.gif

You will be using the PImage class, and the loadImage() and image() methods.

1. Create an "*Alien*" class that has x, y position on the screen, a *constructor*, a *draw* method (drawing an image – "invader.gif"), and a *move* method. Construct a program which creates an instance of this class, and moves it across the screen using the *move* and *draw* methods. When it reaches the edge of the screen it should move down **smoothly** a distance equal to its own height and continue in the opposite direction. **(30 Marks)**
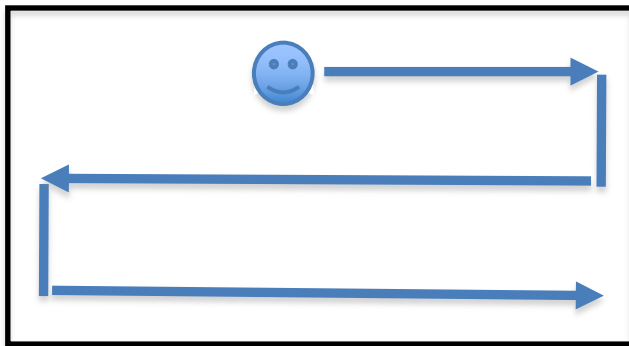
For part 1 you should look at Lab 1 for ideas / examples. Think about a "state" in which direction is recorded, either (Right X ++), (Left X--) or (Down Y++). Maybe use your lab 1 code as a starting point, rather than overlapping move the square down and reverse its direction when it hits the side.

2. Using the array code presented in class as a template, write a program that creates an array of *Alien* objects (10 Aliens in total), initializes the array with new *alien* objects, and uses the move and draw methods to move all of the objects across and down the screen. **(30 Marks)**

For part 2 look at the example circle code presented in the Lecture. You should use an array or ArrayList to store multiple aliens instead of accessing a single Alien.

3. Create an *explode* method which changes the appearance of the alien (each alien should be able to change independently). Demonstrate the method by having the aliens explode at random. You can use a second PImage loaded with exploding.gif **(20 Marks)**

Think about "status" which is either exploding or not exploding. This can be used when you need to draw each alien. Also look at the `random( )` *processing method.*

YOU WILL NEED A COMPLETE SOLUTION TO THIS LAB BY NEXT WEEK TO COMPLETE NEXT WEEK'S LAB. THIS EXERCISE IS DUE THIS WEEK.

4. Change the appearance of some of the aliens (using a different image), and give them a smooth sinusoidal movement pattern. Have the aliens speed up their rate of movement over time. A subclass is one way of having objects that add additional or different behavior. (20 Marks)

Lab challenge: details in lab – ask your demonstrator if you miss the announcement.