175003 2014 S1 – Assignment 2

Programming Task

In this task you need to modify code used in previous tutorials.

Your goal is to write a program that creates two bouncing balls. Each ball must have a different (random) starting position, colour, and velocity. Each ball must bounce independently off the walls.

The balls also have to be "sticky", so when they come into contact for the first time they must stick together and move together. When the stuck balls bounce off a wall, the direction of the balls must change when the ball nearest the wall bounces.

Maths

In order to perform this task, you may (depending on how you choose to solve it) be required to calculate the distance between two points that are the centres of the circles. This is a simple calculation given the (x,y) coordinates of each point. If your two points are (x1,y1) and (x2,y2) then the distance between the two points is given by:

$$distance = \sqrt{(x1 - x2)^2 + (y1 - y2)^2} = \sqrt{(x1 - x2) \times (x1 - x2) + (y1 - y2) \times (y1 - y2)}$$

Processing lets you work out square roots easily, such as in this line of code:

```
float distance = sqrt((x1-x2)*(x1-x2)+(y1-y2)*(y1-y2));
```

Stretch

For students who wish a more challenging task, attempt to solve this problem for three balls.

Submission

Submission will be via the link on AUTonline similar to the process described for the first assignment.

The deadline for the assignment submission is **Thursday the 10th of April, 8pm**.

Assessment

You need to ensure that your code works and performs as expected. In addition, you will need to ensure that your code is documented (use comments to explain the main elements of your program) and conforms to a reasonable coding convention, in particular the indentation of code segments.