CS 2, Winter 2008: Quiz 1

1. [25 points] Write a Processing sketch to display a window that looks like the following.

The background is white. Everything is totally opaque. The “vase” is outlined in black and colored green. The “balloons” are not outlined, but are colored blue (left) and red (right). The “strings” are black. The gridlines are spaced every 10 pixels, to help you determine positions and sizes (don’t draw them).

2. [25 points] Write a Processing sketch with the following behavior. Every frame, the window (which has the default size of 100x100) is erased with a black background and an ellipse is drawn. The position of the ellipse is random, within the window. The ellipse is colored a value of gray based on the position of the mouse in the window: pure black at the far left of the window and pure white at the far right. (It is not outlined.) The size of the ellipse is 5 pixels wide and 10 tall if the mouse is on the upper half of the window, or 10 wide and 5 tall if it is on the lower half; these values are doubled if the mouse button is pressed.

3. [25 points] Write a Processing sketch with the following behavior. An object starts in the middle of the (default-sized) window and wanders back and forth horizontally; it remains at the center vertically. Each frame, it takes a random step at most three pixels left or right. The object is drawn as an ellipse, with no outline, and with the fill cycling between white one frame, medium gray (say, 128) the next, and dark gray (say, 64) the next, and then repeating. The size of the ellipse starts at 10; each time the mouse is pressed within the ellipse (according to the dist() function), it is decreased by 1 until it reaches the smallest allowed size of 1.

4. [20 points] Provide short answers to the following questions (5 points each).

(a) What is the difference between = and ==?

(b) What is the boolean expression to test if the value of variable x is either between 5 and 10 (inclusive) or between 90 and 95 (inclusive)?

(c) (Material we haven’t covered yet in 2009.)

(d) What is the difference between having “if (mousePressed) {...}” in the draw() body, and having a separate function “void mousePressed() {...}”?