

15-102 Exploring Programming with Graphics

Homework 2

Start: Tue 5.17.11
Due: in class Wed 5.18.11
Goal: Adding Versatility

Course Web Site:

www.andrew.cmu.edu/course/15-102

Reading:

Posted on the calendar web page available from the link shown above.

Assignment:

You will draw your initials using curves that are made with the combination of the `beginShape()` – `curveVertex()` `endShape()` functions. You will code this using variables and arithmetic expressions so your initials can be drawn at any location in the graphics window and at any size by editing only three variables: the (x, y) anchor point of your initials and their size. In doing this homework, you will explore the stuff that can make programming useful. You will also continue to explore the functions that Processing provides for graphics.

Specifications:

1. _____ Put the following information as comments at the top of your program:
 - name
 - section or time
 - e-mail address ***including*** @andrew.cmu.edu
 - a copyright statement
 - people in class with whom you worked
 - other people with whom you worked
2. _____ The last line of code must be **`saveFrame("hw2.jpg")`** ;
3. _____ Draw your initials using a different set of Processing functions: the **`curveVertex()`** function that must be coupled with the **`beginShape()`** and **`endShape()`** functions. You may use functions from the shape-2d set and others, but the majority of the shapes forming your initials must be curves.
4. _____ The anchor point of your initials must be the center of a circle that will "bound" your initials. The values of this anchor point must be stored in two variables of type **`float`**. The diameter of the bounding circle must be stored in a variable of type **`float`**.
5. _____ The initials must be designed to fit within the bounding circle. *This circle does not have to be displayed – that decision is yours.* The initials must take up much of the area within the circle and come reasonably close to the edge of the circle where reasonable.
6. _____ The coordinates of all points needed to draw the curves that form the initials must be composed of arithmetic expressions using the anchor point variables and some percentage of the diameter of the bounding circle. "Magic numbers" to

- locate coordinates or set sizes are not allowed. Refer to the class code and board notes for examples.
7. _____ The initials must move when the **x** and/or **y** values of the anchor point are altered.
 8. _____ The initials must grow/shrink when the diameter of the bounding circle is altered.
 9. _____ The width of the lines(**strokeWeight**) that form the curves may be a fixed width or vary in some way. If the line size is fixed, it must be at least three pixels wide. To do this, you will need to explore the Processing function **strokeWeight()**.
 10. _____ If a letter of the initials is repeated, each letter must have a unique shape.
 11. _____ The initials must have at least three colors other than black, white, or shades of gray. These three colors **must** be colors that are not pure red or blue or green. The use of pure red, blue, or green is fine, but they will not count towards the requirement of “using three colors.” You can use the *Tools* menu’s *Color Selector* option of Processing to get the **rgb** values for any color you select.

Advice:

- We will use this set of initials for several future programs so do it right the first time to avoid having a do-over.
- **The use of the center of the bounding circle** in which the initials fit as the anchor point is mandatory. Jim’s class code and board notes use the upper right corner of a rectangle. If your code uses the corner of a rectangle as the anchor point for the initials, it will result in a grade of zero.
- **Do not** use the names, **width**, **height**, or **size** as variables. These names are used by Processing.
- This continues the exploratory nature of programming where you are asked to do a great deal with little or no help. You are **strongly** encouraged to work within a small group for these assignments.

Grading:

Have a print of your graphics and a print of your code ready to hand in at the start of class on Wednesday.

Handin of the files:

This will be explained on Thursday. Do not lose your program files.

Webpage Display:

This will also be explained on Thursday.

Sample:

Shown below are four different runs of Jim's code. The size of the window for all four runs is 400x400. The initials are in different locations and have different sizes because the values of the three variables are changed.

