General

CPSC 601.36 is an unusual course in that it covers a lot of material that normally targets new undergraduate students, but is intended for graduate students that have ambitions in art and design. As such the assignments will take you through a progression of tasks to develop programming skills. On the other hand, it seems inappropriate to waste the skills and creative energy that art and design graduate students bring by over-constraining assignments.

For each assignment you will write a program in the Processing language. The assignments specify a set of program language features that you must incorporate into your program to get full marks. What the program does is up to you. Let your creative goals guide you.

This is a very broad target, and if you have difficulty narrowing down what you want to do, talk to the instructor as soon as possible. It is likely that in the early assignments, your skills will fall short of what you want to accomplish, so some guidance setting intermediate goals may be required.

You may choose to connect your assignments together so that the ultimate result will be part of your research goals. Alternatively, you can use the assignments to experiment in disparate directions to feel your way around the possibilities of Processing.

Grading

For each assignment, you are required to hand in two parts.

1. A written description of what your program does, how it uses the required Processing language features, and if possible, how it fits with your creative goals. This should be a half page or so, single space, and definitely no more than one page.

2. Your Processing program, complete with all required files so that the instructor can read and execute your code.

Each part is graded on a scale of zero to five, resulting in a scale of zero to ten for the assignment.

1 Assignment 1

Write a program with the following features.

- The program should produce an image composed with a selection of the shape elements described in the Shape section of the text.
- The program should use some arithmetic to determine where the shape elements should appear, or how large they should be. For example, you might allow for your image to have a different size by using the size() function, then scale the image elements based on the values of the variables width and height.
- The program should make at least one decision (an if statement) that affects the displayed image. Normally, a program would have some input so that when the program runs, the input determines which branch the if statement follows. However, in this assignment it will be sufficient to create a variable and assign it a value that will be used in the decision. Make sure you describe this variable in your written submission, so that the instructor can change the value in your code to see the effect of the decision. It would also be smart to put some comments in your code where the variables are created and assigned.
2 Assignment 2

Write a program that creates an image. The program should have the following features.

- The program should feature some form of repetition (e.g., a *for* loop) that results in repetitive patterns in the image.
- The program/image should feature some text.
- The program should use trigonometry and/or random numbers in its creation of the image.

3 Assignment 3

Write a program that creates an image. The program should have the following features.

- The program/image should be dynamic, or *continuous* in *Processing* jargon.
- The program should use *functions* to help organize the code. The functions can be used to encapsulate a group of statements that work together for readability. Or the function may encapsulate some task your program does multiple times so that using a function reduces the size of your program.
- The program should make use of at least one of keyboard or mouse input.

4 Assignment 4

Write a program that creates an image. The program should have the following features.

- The program/image should portray one or more objects in motion.
- The program should make use of a one- and/or two-dimensional array.
- The program should make use of images.

5 Assignment 5

Write a program that creates an image. The program should have the following features.

- The program should use phidgets for input or output. There will be a limited number of phidget devices available for students. These must be returned to receive a grade for this assignment. Because the selection is limited, you may have to negotiate with your classmates when selecting which phidgets to work with.
- The program should impress the instructor with its comprehensive use of the *Processing* language features covered in the course, and its aesthetic impact. In other words, create.