Homework #2 (100 pts total; due Mon 3/22 @ 11:59pm)
CSCI 3353 - Hibbs

Instructions: For this assignment, you may work on your own, or with another student. In either case, you must complete the "Main Assignment" portion below, which is worth a maximum grade of a D (60%). In order to receive full credit for this assignment, you must also complete additional extensions. Students working individually should complete 2 extensions for full credit; students working in pairs should complete 4 extensions to receive full credit. Assignments will be graded based on:

- Accurate completion of the main assignment, including 1-page write up (50%)
- Accurate completion of two extensions (40%)
- My own subjective aesthetics (10%)

Again, we will use google classroom to turn in homework by uploading a Processing archive with your results. To create an archive, from within Processing select "Tools/Archive Sketch," then specify the filename/location for the archive. This assignment should follow the convention hw2_username.zip where "username" is replaced with your username. If you are working in a pair, include both usernames (separated by an "_"). For example, if I was working with Dr. Myers on this assignment, our archive would be hw2_mhibbs_pmyers.zip. Once you have created this archive, on the classroom assignment page select "Add or Create" and upload your archive before turning in your assignment.

Main Assignment

Write a Processing sketch to create a scene involving 2 ***different*** (they should not be very similar) L-systems ***of your own design*** (do not use the L-systems discussed in class, nor those on wikipedia or other "obvious" resources -- these should be unique L-systems out of your own mind). At least ***one of your L-systems should be bracketed***, meaning that it uses a stack to "remember" some prior state. This could be a scene involving a tree and another plant, a cityscape, or any other fractal pattern generated by an L-system. ***ALSO***, include a brief write-up (less than 1 page) describing your scene, which extensions you implemented, and your L-systems (include the alphabet, axiom, and rules of your systems). Place this file in the folder containing your sketch before creating your archive, and it will be included.

Possible Extensions

1. Include an additional, *different* L-system in your scene.
2. Make at least one of your L-systems stochastic, such that it produces a slightly different scene each time the spacebar (or some other key that you designate) is pressed. (Note: in a stochastic L-system rules are assigned probabilities such that each alphabet letter may have multiple transitions each with a probability that sums to 1 -- e.g. A → AB with 50% chance and A → AC with 50% chance)
3. Make at least one of your L-systems parametric. (Note: in a parametric L-system, rules are associated with parameters that can be used to select rules, and can modify the behavior of instructions; e.g. F(2) could mean draw forward 2 units; a rule like F(x) : x>2 → F(x * 2) would mean replace F(#) with F(twice that number) only if # was greater than 2)
4. Include user interaction with your L-systems beyond what was achieved in class, perhaps by changing angles/lengths/shapes based on mouse positions or clicks.
5. Include a particle system to enhance your scene, such as leaves falling from a tree, or a tree on fire.
6. Use Bezier curves or Catmull-Rom splines within one of your L-systems.
7. Use texture mapped shapes, rather than just lines to enhance one or more of your L-systems.
8. Some other idea that is approved by me BEFORE the due date.