

6.914 Homework 4

Assigned 1/22 - due 1/24 by 4pm to mish@mit.edu

0) *Not your standard free-response question, since this is your last structured assignment...*
In some detail, describe your vision for the final project that will be due next Wednesday afternoon. (I'll help you work through any bugs by final presentations on Thursday night.) Ideally, it will combine your interest in science/engineering – which is why you're here, right? – with the powerful graphics abilities that you now have. Think along the lines of: visualization of a scientific phenomenon; interface for a psychology test; educational program for children; blueprint construction program; design program for engineers; something for your research project; etc.

Please write all of the following programs, as well as you can. Make sure to comment your code so it's readable. Copy and paste each of your solutions into your email, and let me know which questions you're answering.

- 1) Create a class of objects called LittleBug. Each LittleBug should have the following attributes: color, name, age, height, and initial position (x coordinate and y coordinate), which will be specified in the constructor. They should also have a boolean attribute, labelShowing, that is given by default as false in the class and not taken as a parameter in the constructor.
 - a. Write a no-parameter method called drawBug that draws each bug at its own position with its own color and size.
 - b. Write a method called setBugSize that sets its argument (a float) as the bug's size.
 - c. Write a method called setLabels that sets its argument (a boolean) as labelShowing. When labelShowing is true, have the bug display its name directly above it on the screen. (Make sure that you've created a font – try using createFont – to use for printing text to the screen.)

- 2) Write a program that generates some sort of random, colorful, interesting pattern continuously, and saves to consecutively-numbered .tif images whenever the user clicks the mouse. Bonus: write a program that loads your images and scrolls through them, using PImage and delay(). (Hint: for going through consecutively numbered images, use string concatenation with the counting variable [x in “int x = 0;...”] of a ‘for’ loop.)
Bonus – if the user clicks the mouse twice in a row (use millis() and a temporary variable to check) have the screen clear and a different type of colorful pattern start.

- 3) Write a program that uses switch-case (as seen in example 4.1) to change screens, with each case linking to a different method. For instance, one method could be the entire program (which you wrote earlier) that lets the user type to the screen; another could be the drawing program you wrote; or you can choose slightly simpler ideas at each screen. Use the left and right arrow keys (remember keyCode) to go between the screens.
Bonus: loop around, so that pressing left from the “first” screen goes to the last screen, and pressing right from the last screen goes to the first screen. Remember that % doesn't work on negative numbers, so you'll need a workaround for that.