

CSc 101 -- Section 2 -- Algorithms and Basic Processing

In class this week we talked about the very basics of what an algorithm is. Recall that an algorithm is just a series of very detailed steps (perhaps with repetitions) for solving a problem. Computer scientists use algorithms to solve computational problems.

Soon, we will start to learn how to program in a language called Processing. When we do write programs, we have to “think algorithmically” because programs have to be told exactly what to do, in a step-by-step manner. Remember: When we are coming up with an algorithm we have our “initial state” (the input) and our “output state” (the result). Below are several problems that people need to solve in real life. Come up with an algorithm and corresponding decision tree to solve each of these. Remember that details are important. Don’t just write 1 or two sentences explaining the problem.

- (1)** Beginning state: Driving down a road
Output state: Parallel parked on the side of the road

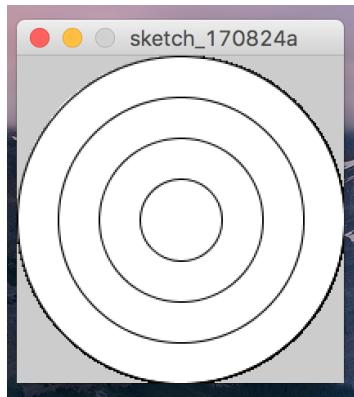
- (2)** Beginning state: In a stocked kitchen, wanting a hamburger
Output state: Having a fully cooked hamburger

- (3) Beginning state: Beginning a game of Tic-Tac-Toe with an opponent, you have the first turn
Output state: Winning the game

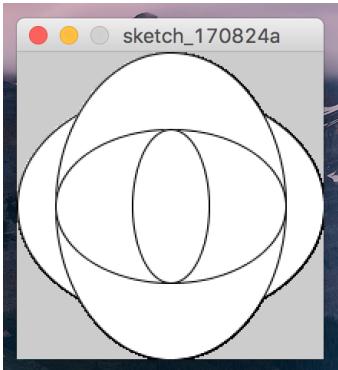
In class we've also talked about some of the basics of programming in processing. We've touched on how to set the size of the canvas, how to draw shapes, how to manipulate color and transparency, and how to use variables. Today you'll utilize all of these skills in working on these problems.

Before starting the problems, open up processing on your lab computer (or laptop, if you prefer) and create a new sketch to write code in. Also, if you don't finish all of the problems by the end of section, that is totally fine! Use the remaining problems as study material for quizzes and exams.

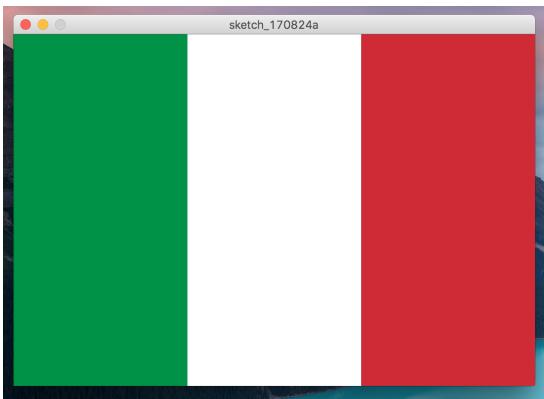
- (4) Write a processing program that produces a window like what is shown below. Make the window 200x200 pixels, and use four ellipses.



(5) Modify the program from the last problem to make the window look like the following instead. To do so, you only need to change the width and/or height of your ellipses.



(6) Create a processing sketch that displays the Italian flag, which should look like this:



Note that:

- The strokeWeight is set to 0
- The size of the window is 600 pixels wide and 400 pixels tall
- Each section of the flag is exactly 1/3rd of the window

(7) Create a processing sketch that displays the Jamaican flag, which should look like this:



Again, note that:

- The strokeWeight is set to 0
- The size of the window is 600 pixels wide and 400 pixels tall
- The yellow X crosses the entire flag