CS 161
Autumn 2017

Pre-Lecture Excercise for Lecture 2
Date: Sep. 27, 2017

Pre-lecture exercises will not be collected for credit. However, you will get more out of each lecture if you do them, and they will be referenced during lecture. We recommend **writing out** your answers to pre-lecture exercises before class. Pre-lecture exercises usually should not take you more than 20 minutes.

In this pre-lecture exercise, you will get started with Jupyter notebooks and Python, which we will be referencing throughout the course. There are two ways to use Jupyter notebooks.

1. Online, through your browser. You do not need to install any software.
2. Offline, still through your browser. You will need to install Python 3.3 or higher and Jupyter Notebook.

You will also play around with some mystery sorting algorithms written in Python!

[**Note:** This pre-lecture exercise might take a bit longer than normal pre-lecture exercises if you are not familiar with Python.]

Exercise 1. Go to `jupyter.org`, and get at least one of the two ways of using Jupyter notebooks up and running. We encourage you to install Python and Jupyter Notebook, since much of the stuff we'll be doing with them involve examining the runtime of algorithms. This may be better/more interesting if the algorithms are actually running on your computer, rather than in Jupyter's cloud.

1. To use Jupyter notebooks in the browser, go to `jupyter.org` and click "Try it in your browser." This is all you need to do.
2. To install Jupyter notebooks on your computer, follow the instructions at `http://jupyter.org/install.html`.

If you are having difficulty, please talk to a TA during office hours or ask on Piazza.

Exercise 1.5. Download the `preLecture2.ipynb` file from the course website and open it as a Jupyter Notebook.

Exercise 2. The first chunk of `preLecture2.ipynb` is just a bunch of examples of Python in action. Walk through them and get a feel for the language. If you are completely new to Python, you may wish to work through the tutorial linked in the notebook. To begin with, you will not have to write any Python code yourself, just modify other people's code. However, knowing more Python will probably help.

Execise 3. Finally, the actual pre-lecture exercise. Take a look at the two Python programs `mysteryAlgorithmOne` and `mysteryAlgorithmTwo`. Both of these are sorting algorithms.

Part A. For both algorithms, step through what they do to the list `A = [5,3,4,1,6]` on paper.

Part B. Both algorithms are implementations of the same algorithm that you have seen before in CS106b.[1] What algorithm is this?

[1] At least, if you took CS106b in recent memory.