Lab 0

Due **Wednesday 1/23/19** at 11:59 p.m. on Zybook and Canvas
You are required to work in a pair.

Lab guidelines: Complete the problems below. Submit the programming problems to Zybook for grading, and the text response to Canvas. Each program should be placed in its own file, named exactly as specified.

Your submission must be your work, and only your work. All program files should contain header docstrings with name(s) of program author(s), creation date, and a brief explanation of the program, as well as in-line comments explaining what your code does.

0. Warmup and ASCII art (Zybook, ch. 4.1–4.3)
   Complete the assignments in the chapter 4.1–4.3 in Zybook.

1. Exam average (Zybook, ch. 4.4), `lab0pr1.py`
   Write a program that asks the user for three exam scores and outputs their average. You can assume that the user provides valid input (all numbers will be positive integers). A sample run of your program would look like this:

   ```
   Please enter the first exam score: 90
   Please enter the second exam score: 97
   Please enter the third exam score: 92
   Exam average is 93.0
   ```

2. Last problem: Algorithms around us (Canvas), `lab0pr2.txt`
   The last problem in most labs will be a non-coding assignment that will help you learn more about different branches of computer science, the problems that CS solves and faces these days, technology of the future, and so on. Unlike other problems in the lab, that you need to complete on your own (or with your partner), to answer the questions of the last problem you are welcome to consult any source you find credible, including internet sites and forums, family members, friends outside of class, your class colleagues, etc. There is no one right answer to most of the questions. This week we will think about how algorithms underlie many facets of everyday life (in the US). Watch the TED talk by Kevin Slavin "How algorithms shape our world" (15 minutes):

   `http://www.ted.com/talks/kevin_slavin_how_algorithms_shape_our_world?language=en`

   Then answer the following questions in your response file:

   (a) Why do you think algorithms can (or cannot) be viewed as part of nature, as the speaker claims in his last sentence? (Provide a 1-3 sentence response.)

   (b) We are not algorithmic stock market traders, so how do algorithms shape our world? In other words, how is your day-to-day life governed or affected by the work of algorithms? For example, if you live in a dorm, your roommate was likely chosen by a matching algorithm that assigned roommates of the same

sex to a room. When you ride a bus or use a pedestrian crossing, the traffic-light schedule has a complicated algorithm behind it that aims to optimize safety, minimize traffic jams in the city, and so on. Give at least three of your own examples. (The more the better, but no more than 10.)

(c) For each of your examples, would you know if the algorithm failed to work correctly, and how would you be able to detect that? (For instance, in room-mate matching if ten people were assigned to the same 2-person room, we would know there was a problem. If green on the traffic light only lasted 0.1 seconds, we'd suspect a problem as well).