Python Exercises, Part 1: The Basics!

Eckel, TJHSST AI1, Fall 2021

Background & Explanation

Your first task this year, once Python is up and running, is to master the basics (including the use of command line arguments). Part of the goal with this assignment is to show you how easy it is to Google how to do things in Python, so I'm not giving you too much help! Feel free to help each other as well! Three important notes:

- Refer often to the list of built-in commands (https://docs.python.org/3/library/functions.html) or Google it!
- You may NOT import ANYTHING besides "sys" for this assignment. Plenty of that coming later, but for now we're just learning basics!

Finally: All inputs below are **command line arguments**, NOT uses of input(). If needed, look up how command line arguments work in Python. (We're covering this on the second day of class!)

Required Work

Please put all of your code **into a single .py file** – a single script.

A. If `sys.argv[1]` is "A", assume the next three console inputs are integers. Output the sum of these three numbers.

B. If `sys.argv[1]` is "B", assume there are some number of remaining console inputs (at least one) all of which are integers. Output the sum of all of these numbers.

C. If `sys.argv[1]` is "C", assume there are some number of remaining console inputs (at least one) all of which are integers. Output the list of those integers that are divisible by three.

D. If `sys.argv[1]` is "D", assume the next console input is an integer, *n*. Output the first *n* Fibonacci numbers (formatting isn't important). (eg, 6 ➜ 1, 1, 2, 3, 5, 8).

E. If `sys.argv[1]` is "E", assume the next two console inputs are integers. Print the value of $f(k) = k^2 - 3k + 2$ for each integer between the two inputs (eg, 2 5 ➜ 0, 2, 6, 12).

F. If `sys.argv[1]` is "F", assume the next three console inputs are numbers, not necessarily integers. Calculate the area of a triangle given an input of three side lengths. If the three side lengths do not make a valid triangle, have some sort of error message output. (Feel free to look up the formula for this.) Again note: the side lengths should be allowed to be floats (decimal numbers), not just integers.

G. If `sys.argv[1]` is "G", assume the next console input is a string. Count the number of each vowel in that string. Output should be a list of the five vowels with their respective counts.

Specification:

Submit your Python file to the link given on the course website.

This assignment is **complete** if:

- The "Name" field on the Dropbox submission form contains your **class period**, then your **last name**, then your **first name**, in that order.
- Every problem is either **solved** or **prints a written explanation to the console** explaining why it doesn't work / how you're stuck.