Hostos BMI TEAM – Python Boot Camp

Winter 2020

Assignment #2
Due: January 21, 2020

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Exercises

1. Create a Python dictionary called **students** to represent the following table.

Students	
Key	**Values**
"Name"	["Bob", "Alice," "Charlie", "Delilah", "Joe", "Esperanza"]
"Major"	["EE", "CpE", "ChemE", "Journalism", "Stalking", "MechE"]
"GPA"	[1.5, 2.5, 3.8, 2.1, 4.0, 3.0]

2. Add the following key to the **students** dictionary.

Key	**Values**
"Num of absences"	[1298, 5, 3, 1, 0, 2]

3. Create a function to find the average GPA of all the students.

4. Create a function to find the highest number absences of all the students.

5. Let's say that the semester has ended. Reset all the student's number of absences to 0.

6. Say that a new student has joined this small school. Append this student to the end of every list.

Name – Fernando

Major – EE

GPA – 3.2

Number of absences – 0

Programming Challenges

For this part of the assignment, you must push your code onto GitHub. Please create a new file for each programming challenge below. I will check your repositories by 10 A.M. on January 21, 2020.

Some of these problems' solutions are available online (as I didn't produce them out of thin air). Try not to look at the solution until after you've tried them!

The stars ★ indicate the level of difficulty. These difficulties are highly subjective, so don't worry! Just complete any that you can. We'll go over the solutions to these during class!

Challenge #1 (★)

Warm up – Write a function that finds the maximum of a list. If the list is empty, return None.

Test cases:

Input	Expected output
Input_list = [1,2,3]	3
Input_list = [1,2, 19, 22]	7
Input_list = [1,1]	1
Input_list = [2.5, 6.2, 3.14]	6.2
Input_list = []	None

Challenge #2 (★)

Warm up – Write a function that finds the minimum of a list. If the list is empty, return None.

Test cases:

Input	Expected output
Input_list = [1,2,3]	1
Input_list = [1,2, 19, 22]	1
Input_list = [1,1]	1
Input_list = [2.5, 6.2, 3.14]	2.5
Input_list = []	None

Challenge #3 (★★)

Write a function that extracts all the numerical digits from a string. Return these digits as a list of integers. If the string is empty, or does not contain any numerical digits, return an empty list.

Test cases:

Input	Expected output
"Bob has 1 donut and 16 coffees"	[1, 1, 6]
"Oh my! You have 18 keys!"	[1, 8]
"Hey, look there are 4 coffees and 5 donuts on the table"	[4, 5]
"Pi is approximately 3.1415926"	[3, 1, 4, 1, 5, 9, 2, 6]
"Amy has no absences in this class!"	[]

Challenge #4 (★★★)

Write a function that takes a list as an input. Find the sum between the **smallest odd number** and the **largest odd number** on that list. Note that the **smallest odd number** and **largest odd number** may be the same thing if there is only one odd number in the list.

If there are no odd numbers, the output should be 0.

Input	Expected output
Input = [1,3,5,7,9]	10
Input = [1,2,3,4,5]	6
Input = [2,4,6,8,10,3]	6
Input = [2, 4, 10, 28, 32]	0

Challenge #5 (★★★)

Hacker-rank inspired Challenge – Given five positive integers, find the minimum and maximum values that can be calculated by summing exactly four of the five integers. Then put the respective minimum and maximum values into a list. Return this list.

Input	Expected output
Input = [1,3,5,7,9]	[16, 24]
Input = [1,2,3,4,5]	[10, 14]
Input = [2,4,6,8,10]	[20, 28]