Homework 5 *(Due: Sep 27)*
Python Programming for Data Science - COSC 3360

Department of Computer Science and Electrical Engineering

Fall Semester, 2022

Exercises

*Create a **New Project** for every exercise. Take a screenshot of the source code along with its output and place the **source code** and the **screenshot** in a **zipped folder** named **LastNameFirstName_HW5***

Exercise 1

You are driving on a highway with your vehicle and in front of you a car is stopped. You are asked to enter the **speed** of your vehicle (in **km/h**) and the **distance** between your vehicle and the stopped one (in **meters**). Using a **lambda** that accepts the parameters **distance** and **speed**, compute the **time to collision** (in **seconds**)

Note: Formula of speed (**v**): $v = s/t$, where **s** is distance and **t** is time

Exercise 2

Ask user to enter one of the following two options: 1. Miles->Kilometers or 2. Kilometers->Miles. Then, ask user to enter distance (use *float* instead of *int*). Pass these two input parameters to a **lambda** and return the converted distance (use **if else** in your **lambda** expression)

Exercise 3

Similarly to Ex. 2, convert 1. Fahrenheit->Celsius or 2. Celsius->Fahrenheit with a **lambda**

Exercise 4

Given the following list: *li = [9, "Robot", 3.14, 8, "Vision"]*, use a **filter()** function along with a **function** named **int_dataTypes()** to filter out irrelevant data types. Your new list should contain only **integers**; print list

Exercise 5

Similarly to Ex. 4, use a **filter()** along with a **lambda** (instead of function **int_dataTypes()**) to print only the **string** elements of the list

See overleaf

Exercise 6

Given the following list: *myList = [3, 9.45, 'Robotics', 8, 1]*, use any combination of **lambda, filter**, and **map** to convert the string element of the list to **upper case**. Your output should be: **ROBOTICS** and should be of **string** data type (not a list). You code should be a one-line code with the exception of the list definition above, thus, two lines, in total

Note 1: You can use the built-in functions **ord()** and **chr()** to convert a single character to ASCII and an ASCII to a character, respectively, but you **cannot** use the built-in function **upper()**

Note 2: You may want to use the function: **''.join()** to convert a list of single characters to a string, that is: myL = ['V', 'i', 's', 'i', 'o', 'n']; myStr = ''.join(myL)

Note 3: You may wish to first try to filter out the non-string data types then pass the string data type to a map function. You may have to use nested **lambda** expressions

Note: Submit through **Canvas**