



FCS CYCLE 58

Assignment 4

Due Date: 19 October, 12 AM

In this assignment, you will be tasked with writing a Python program that utilizes tuples and dictionaries, The program will begin by displaying a menu with four options:

1. Sum Tuples
2. Export JSON
3. Import JSON
4. Exit

Enter a choice:

The user will select one of the options by entering the corresponding number, the menu should be displayed again after every choice until the user exists the program.

Choice 1: This function takes two tuples as parameters and returns a new tuple that contains the sum of the corresponding elements in the input tuples. The input tuples are assumed to be of the same length.

Example 1: Input: tup1 = (1, 2, 3), tup2 = (4, 5, 6) Output: (5, 7, 9)

Example 2: Input: tup1 = (3, 3, 4, 4), tup2 = (1, 1, 1, 1) Output: (4, 4, 5, 5)

Choice 2: This function takes a dictionary and a filename as parameters and writes the dictionary to a JSON (JavaScript Object Notation) file with the specified filename, the resulting JSON file should be valid and correctly formatted.

(This should be done manually without the use of any libraries)

Choice 3: This function takes a JSON file name as parameter and convert each object in the JSON file to a dictionary and stores it in a list. The function should return the list containing all the objects in the JSON file as dictionaries (so basically it should return a list of dictionaries).

(This should be done manually without the use of any libraries)

Choice 4: will terminate the program

(Hint: You should look up and understand the structure of a JSON file, as well as Python's built-in file I/O operations that you will use to read from and write to files.)

Exercise 2:

Use the big-O notation to indicate the order of growth of each of the following functions where N is the size of the input.

- a. $\frac{1}{6}N + 8000N^3 + 24$
- b. $\frac{1}{6}N^3$
- c. $\frac{1}{6}N! + 200N^4$
- d. $N \log N + 1000$
- e. $\log N + N$
- f. $\frac{1}{2}N(N-1)$
- g. $N^2 + 220N \log N^2 + 3N + 9000$
- h. $N! + 3N + 2N + N^3 + N^2$

Submission Steps:

1. Name your python file which includes your submission similar to the following
assignment_04_Name_LastName
2. Push your file to the remote repository foundation-cs-python on GitHub
3. Finally open the assignment on GitHub and submit the link.
4. If you have any inquiry about the assignment or if there is something not clear about the steps feel free to contact me through **slack** or by **email**

Important Reminder !

The assignment should be the GitHub link, no files or replit links will be accepted for the submission and you will be treated as if you did not do the assignment

You cannot do well on the exams unless you do the assignment

YOURSELF! Do not Google the solution or chatgpt it.

This will not help you! It is your decision in the end, your responsibility.

You are allowed to lookup methods in python that might help you in your solution.