FCS CYCLE 58

Assignment 2

Due Date: 28 September, 12 AM

Exercise 1:

Write a function that takes an integer from the user and calculates its factorial, (The factorial of a non-negative integer n, denoted by n!, is the product of all positive integers less than or equal to n)

Example 1: Input: 4, Output: 24 (1 * 2 * 3 * 4)
Example 2: Input: 6, Output: 720 (1 * 2 * 3 * 4 * 5 * 6)
Example 3: Input: 1, Output: 1

Exercise 2:

Write a function that takes an integer as an input from the user and finds all its divisors and stores them in a list.

Example 1: Input: 10, Output: [1, 2, 5, 10]
Example 2: Input: 16, Output: [1, 2, 4, 8, 16]
Example 3: input: 5, Output: []

Exercise 3:

Write a function called reverseString that takes a string as input from the user and returns the string reversed. You must use a loop to implement the reversal, and you cannot use any built-in string or list reversal functions.

Example 1: Input: “Hello World”, Output: “dlroW olleH”
Example 2: Input: “oneword”, Output: “droweno”

Exercise 4:

Write a function that takes a list of integers as input from the user and returns a new list containing only the even numbers from the original list, in the same order.

Example 1: Input: [1, 2, 3, 4, 5, 6], Output: [2, 4, 6]
Example 2: Input: [5, 3, 18, 4, 2, 7, 10], Output: [18, 4, 2, 10]
Example 3: Input: [5, 3, 11, 5, 1, 7, 27], Output: []

Exercise 5:

Write a function that takes a string as input and checks whether it meets the requirements for a strong password. A strong password should be at least 8 characters long, contain at least one uppercase letter, one lowercase letter, one digit, and one special character (a special character is either #, ?, !, $).

Example 1: Input: “Hello5?world” Output: “Strong password”
Example 2: Input: “password” Output: “Weak password”
Example 3: Input: “Password123” Output: “Weak password”

Exercise 6:

Write a function that takes a string as input and checks whether it is a valid IPv4 address. A valid IPv4 address is a string of four numbers
separated by periods, where each number is between 0 and 255. For example, "192.168.1.1" is a valid IPv4 address. (You should research more about IPv4).

Here are examples of strings that would be considered valid IPv4 addresses:
"192.168.1.1"
"172.16.0.0"
"10.0.0.1"
"255.255.255.0"

here are examples of strings that would be considered invalid IPv4 addresses:
"256.168.1.1" (octet value too large)

"192.168.1" (missing octet)
"10.0.0.01" (leading zero in octet)
"192.168.01.1" (leading zero in octet)
"192.168.1.1.1" (extra period)
"192.168..1" (consecutive periods)
"192.168.1.-1" (negative number)
Note: an octet is each number for example 192 or 255. An octet can be 0 for example 0.192.1.1 is valid but it cannot start with 0 for example 01.192.1.1 is invalid.

Submission Steps:

1. Make a Github remote repository and name it ,foundations-cs-python, inside of this repo you will be storing your assignments until the end of the cycle, so make a folder for every assignment and push the folder (each folder has the file that include the answers of its respective assignment).

2. Name every assignment file similar to the following:
assignment_02_Name_LastName

3. Put all your answers in one file but make sure to comment your code.

4. Finally open the assignment on Github and submit the link.

5. 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.

Important Reminder !

The assignment should be the Github link, no files will be accepted for the submission.
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.