Problem Set for 3/6/2024

Engineering 104 - Fundamentals of Engineering Computing

Formatting, Organization & Code Comments - Complete the following problems in `Python` and include as part of the submission of the appropriate assignment. Your assignment file should include a proper heading, comments and show clear organizational structure with each problem clearly printed, separated and with each result variable clearly displayed. All problems worked should have a formatted/structured print-out. Print a string denoting each problem, with the solution to the problem clearly printed as a formatted string below the denoted problem. Separate each problem using a blank line in both the code and the printed results. Code comments should be completed throughout the file on every line of code by default. If this assignment requires you to write and submit additional auxiliary script, or any other files in the submission, please append your initials capitalized to the end of the file name.

Python Lecture #21 Problems - Iteration/Loops II (10 Points)

Problem 21.1 (4 Points) - Do the following to create a program that simulates how websites ensure that everyone has a unique username.

- *Make a list of five or more usernames called* `current_users`.
- *Make a second list with five or more usernames called* `new_users`. *Make sure that one of the names is the same as a username in the* `current_users` *list.*
- *Loop through the* `new_users` *list to see if each new username has already been used. If it has been used, print a message that the person will need to create a new username. If a username has not been used print a message that the username is available.*

Problem 21.2 (3 Points) - Define a function to calculate the factorial of any given integer using an `for` *loop. Run you function for the value of 5.*

Problem 21.3 (3 Points) - Define a function to calculate the factorial of any given integer using a `while` *loop. Run your function for the value of 5.*