CSCI-C 200

**Lab 5 – Loops and Strings**

**Description**

Design a program that can be solved using while loops or for loops (or both) and string operations. Your program will process a long string with a fixed structure, whose parts are separated using specific characters. The string will contain at least five objects of the same kind (e.g. 6 employees with employee information(first name, last name, job title, salary etc.), or 10 books with book information(book title, author, ISBN number, publisher etc.), and use a structure to describe the objects. The program will search through the string, and perform at least two types of operations - one about string operations such as searching for something or encrypting a text, and another about performing mathematical computations such as finding the average, total, or largest value etc. Your problem should simulate a real-world scenario. Below is an example:

String: John Smith,31,manager,55000; Alex Hoover,25,staff,40000;Jane Meyer,40,staff,45000;

Task 1: Find if there is an employee named Alex Hoover. If so, display all information, otherwise,

give a message telling user “No employee with the Alex Hoover”.

Task 2: Find the average salary of all employees

Other examples:

Search for a book with a particular title and find average prices of all books;

Find if there is a movie being played in a theater, and display total income from that movie;

…

**Rubric**

* 1. Create a function for each task, thus your program will have at least two functions. (5’)
  2. The string contains information of at least five objects. The only hard coded value is the initial string value, and the value to search for, such as employee name, book title, movie name etc. The rest must be retrieved through coding. (10’)
  3. Cannot hard code indexes, e.g. you must use a function or method to retrieve the index of a semicolon; you must dynamically determine how many employees are in the string. (5’)
  4. Must have at least one loop structure. (10’)
  5. Have a utility file and group all the function definitions in this file (10’)
  6. Program runs successfully, and generates meaningful and correct output (30’)
  7. Follow professional coding standards (file headers, comments, code blocks, naming conventions, etc). (10’)
  8. Use pseudocodes to describe a detailed algorithm design. Your code must follow the algorithm design. Your pseudocodes must be more similar to the Python language rather than the English language.
     1. Pseudocodes are used (5’)
     2. Algorithm design is detailed enough. Must also have algorithm design for each function. (5’)
     3. Algorithm design is accurate and complete. (5’)
     4. Program follows the algorithm design. (5’)

**Submission**

Submit all your program files and the algorithm design file.

**Plus and Minus**

1. + 20 points if the initial string is formed through user inputs. Each piece of information is taken from the user input (10’) and there are robust input validations(10’).
2. You can use any Python built-in string methods except split(), rsplit() and splitlines(). <https://www.w3schools.com/python/python_ref_string.asp>

-20 points if any of the three methods is used.