SENG 1000
Software Engineering Foundations and Practice
Assignment 3

Date Assigned: Sun. 16th Feb. Due Date: Sun. 1st Mar. Midnight

Maximum Possible Marks: 100

This assignment serves two purposes:

- It is designed to help you better understand Strings, Lists, Tuples, Dictionaries, Sets.
- Use functions to modularize your code. Refer examples on Canvas.

Questions:

1. [10 Points] Write a python script that can accept any sentence and display on a separate line only words starting with a vowel.

Example 1:
Enter a sentence:
The quick brown fox jumped over the lazy dog. The preceding sentence has the special property that it has all the twenty-six English alphabetic characters appearing in it. Could you come up with another sentence which has the same property?

Vowels are:
over
it
all
english
alphabetic
appearing
in
it
up
another

2. [10 Points] Write a python script to accept a string and check whether it is a palindrome.

Example 1:
Enter a word: Rotator
Rotator is a Palindrome

Example 2:
Enter a word: Car
Car is not a Palindrome

3. [10 Points] Write a python script that can accept first name, last name, year of joining and display the following.

Example 1:
Firstname: John
Lastname: Clark
Year of Joining: 2018

Hi John,

Welcome to ECU
Your email-id is: clarkj18@students.ecu.edu

Thank you

4. [10 Points] Write a python script to accept a list of values "N" from user and calculate sum, mean, standard deviation on user entered list.

Example 1:
Enter value of N: 5

Enter 5 values
2
1.5
6
9.2
3

SUM: 21.7
MEAN: 4.34
STANDARD DEV: 2.8883213117657114

5. [20 Points] Write a python script to accept the tuple data (name, age, height) as where name is string, age is integer and height is floating type. Display the menu (refer question 5 menu format from assignment 2) and implement the following.

Example 1:
1. Insert a record
2. Delete a record
3. Sort the list
4. Display list
5. Exit

Enter your choice: 1

Enter name: Peter
Age: 28
Height: 6.2

Enter your choice: 4

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Peter, Age: 28, Height: 6.2
John, Age: 25, Height: 5.5

Enter your choice: 3

John, Age: 25, Height: 5.5
Peter, Age: 28, Height: 6.2

Enter your choice: 2

Enter the index which you want to delete: 1

Record ['peter', 28, 6.2] deleted

Enter your choice: 5
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6. [20 Points] Write a python script to create Dictionaries and do the following

   - Data to be stored as dictionary: Make ID as a key of dictionary

ID	Name	Education	Year of Joining	Salary
E0001	Aaron	BS in CS	2001	1234.5
E0002	Bill	BS in Mechanical	2004	5000.123
E0003	Clark	MS in CS	2007	4002.6
E0004	Den	BS in Electrical	2001	2000.8
E0005	Emily	MS in Mechanical	2002	8000.12

   - Update the salary to 10% for all records
   - Insert the new element to all records as “Company” and insert company name as “Apple”
   - Delete the record “E0004”
   - Print all values and keys as comma separated values like
     E0001, Aaron, BS in CS, 2001, 1234.5, Apple

7. [20 Points] Write a python script to create Sets and do the following

   - Data to be stored as sets:
     engineers = Set(['John', 'Jane', 'Jack', 'Janice'])
     programmers = Set(['Jack', 'Sam', 'Susan', 'Janice'])
     managers = Set(['Jane', 'Jack', 'Susan', 'Zack'])

   - Perform union operation on all given sets and store in “employees” variable
   - Perform intersection of “engineers” and “managers” and store in “engineering_management” variable
   - Perform difference of sets (managers - engineers – programmers) and store in “fulltime_management” variable
   - Add “Marvin” to engineers
   - Check if employees is super set of engineers
   - Update employees by engineers
   - Again, check if employees is super set of engineers (See the difference)
   - Discard “Susan” from all the sets
   - Print all the set values