**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

1. [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

1. [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

1. [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

1. [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

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

1. [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

1. [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