Diagnostic Test

Fundamental Programming

Instructions:

* Number of questions: 04
* Duration: 90 minutes
* Test takers are not allowed to use any supplimentary materials (books, notes, …) or electrical supports (Google, ChatGPT…)

Ex1

Write a program AscendingDigits to read 3 positive integers from user’s input and determine whether the hundreds digits in the 3 numbers are in ascending order. The output is “Yes” or “No”.

For example, if the 3 integers are 1**2**34, **5**09 and 80**6**33, the result is “Yes”, because the hundreds digits are 2, 5 and 6 respectively, and they are in ascending order.

Sample run 1:

Enter 3 positive integers: 1234 509 80633

The integers are 1234, 509 and 80633

Yes

Sample run 2:

Enter 3 positive integers: 1234 256 9805

The integers are 1234, 256 and 9805

No

Sample run 3:

Enter 3 positive integers: 12516 6344 95

The integers are 12516, 6344 and 95

No

Ex2

Write a program that accepts integers from the keyboard until we enter a zero or a negative number. The program will output the number of positive values entered, the minimum value, the maximum value and the average of all numbers.

Note: Array/list is not allowed.

Sample run:

Enter a positive integer: 6

Enter a positive integer: 3

Enter a positive integer: 2

Enter a positive integer: -4

Number of positive values entered is 3

Maximum value entered is 6

Minimum value entered is 2

Average value is 3.6667

Ex3

Implement function **greatestSum(array)** to find the greatest sum of 2 elements in an array

This function returns the greatest sum of 2 elements in an array

Initialize your array in **main**() (scanner is not required) and call **greatestSum**() to get your result

Note: if you choose Python programming language, you can use numpy but you are not allowed to use any built-in functions.

Sample run 1:

arr[] = {1, 3}

the greatest sum is 4

Sample run 2:

arr[] = {1, 3, 7, 0, 9}

the greatest sum is 16

Sample run 3:

arr[] = {37, 13, 37, 10, 9}

the greatest sum is 74

Ex4

1. Write a program **countWords** to read an English sentence and count the number of words in the sentence. 2 words are separated by only one space. (user’s input is underlined)

Sample run 1:

Enter a sentence: *today is a good day*

Word count: 5

Sample run 2:

Enter a sentence: *Sunday 17th January 2019*

Word count: 4

1. Change your program to accept sentences in which 2 words are separated by multiple spaces

Sample run 1:

Enter a sentence: *today is a good day*

Word count: 5

Sample run 2:

Enter a sentence:  *Sunday 17th January 2019*

Word count: 4