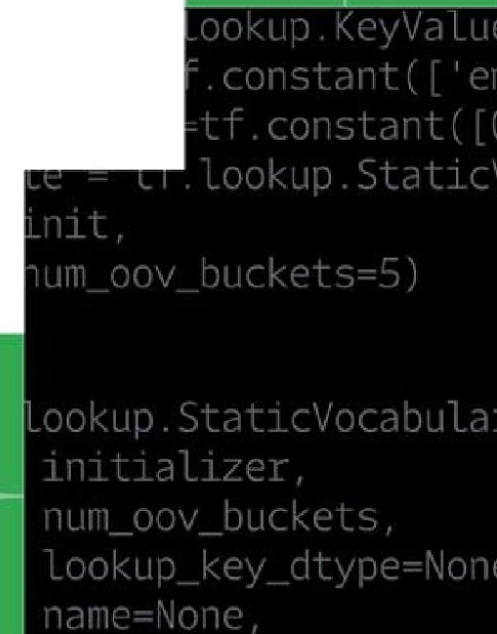
ASSIGNMENT (4)

Arrays

Grade: 250 Points

Deadline: 18/12/2024 - 11:59 PM

Class Room Link



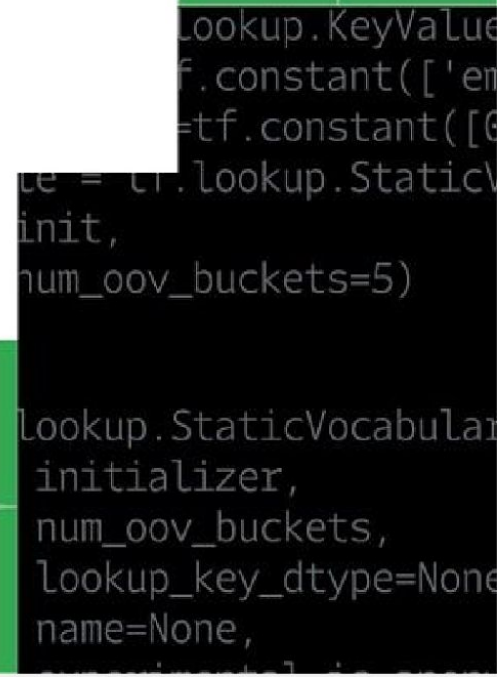
Name:

E-Mail:

ID:

Note:

If you do not have an ID yet, please leave it blank and we will contact you to provide your ID.



Good luck warrior, you will need it

Question One [15 point]

Read an Integer N, then read N integers. { N : Length of array }

Print the summation of numbers in array.

Input
4 7 2 1 3
Output
13

Input
3 -1 2 -3
Output
-2

Input
6 4 5 2 -1 0 9
Output
19

Question Two [15 point]

Read an Integer N, then read N integers.

Print YES if the array is increasing , Otherwise Print NO.

An array is increasing if every element is >= the previous number.

Input
4 1 2 2 5
Output
YES

Input
5 1 0 7 8 9
Output
NO

Input
2 -10 10
Output
YES

Question Three [15 point]

Read an Integer N, then read N integers.

Print the lowest number and its position.

Note: if there are more than one answer print first one's position.

Input
3 1 2 3
Output
1 0

Input
5 5 6 2 3 2
Output
2 2

Input
6 -10 2 4 0 -11 1
Output
-11 4

Question Four [20 point]

Read an Integer N, then read N integers. { N : Length of array }

Print the array after replace each minimum number with maximum number

Input
4 1 2 3 4
Output
4 2 3 1

Input
5 -1 2 3 5 -1
Output
5 2 3 -1 5

Input
7 4 1 3 10 8 10 10
Output
4 10 3 1 8 1 1

Question Five [20 point]

Read an Integer N, then read N integers and an integer target T .
Print indices of the two numbers such that their sum equals the given target.

Each element in the array can be used at most once.

Input
4 2 7 11 15 9
Output
0 1

Input
3 3 2 4 6
Output
1 2

Input
2 3 3 6
Output
0 1

Question Six [20 point]

Read an Integer N, then read N integers.

Print the sorted array in increasing order.

Note:

Do not use built-in functions.

Input
9 5 4 3 7 9 10 15 3 1
Output
1 3 3 4 5 7 9 10 15

Input
3 3 2 4
Output
2 3 4

Input
8 1 -5 5 2 0 -7 2 3
Output
-7 -5 0 1 2 2 3 5

Question Seven [20 point]

Read an Integer N, then read N integers.

Print YES if array reads the same backward and forward , Otherwise Print NO.

Input
4 1 2 3 4
Output
NO

Input
5 1 3 2 3 1
Output
YES

Input
3 1 0 1
Output
YES

Question Eight [20 point]

Given two numbers N and M, a 2D array of size N * M and a number X.

Determine whether X exists in the 2D array A or not.

Print YES if the number exist in the 2D array , otherwise print NO.

Input
2 2 1 2 3 4 3
Output
YES

Input
2 2 1 2 3 4 10
Output
NO

Question Nine [25 point]

Read an Integer N, then read N integers.

Print the smallest possible result of A[i] + A[j] + j – i

such that (0 <= i < j < N)

Input
4 20 1 9 4
Output
7

Input
5 3 1 2 4 6
Output
4

Input
3 8 6 2
Output
9

Question Ten [25 point]

Given a number N and a 2D array A of size N * N.

Print the difference between the summation of its two diagonals

(primary diagonal and secondary diagonal).

Input
4 1 5 12 1 2 -4 6 7 3 8 5 9 3 5 23 -6
Output
-22

Primary Secondary

1	5	12	1
2	-4	6	7
3	8	5	9
3	5	23	-6

Sum_primary = 1 + (-4) + 5 + (-6) = -4

Sum_secondary = 1 + 6 + 8 + 3 = 18

Answer = -4 – 18 = -22

Question Eleven [25 point]

Read an Integer N, then read N integers and an integer k .

Print the maximum summation achievable by selecting at most k elements from the array.

Input
2 2 1 2
Output
3

Input
6 3 5 2 4 8 9 1
Output
22

Input
5 2 -25 -16 -9 0 -3
Output
0

Question Twelve [30 point]

Read an Integer N, then read N integers.

Array is called ALT array if each element has a different sign than the one next to it.
Print the minimum number of operations required to convert the given array into an ALT array.

You are allowed to choose a number and change its sign and that would count as one operation.

Input
3 3 4 2
Output
1

Input
5 1 -2 3 -4 5
Output
0

Input
20 4 -12 -10 14 -15 19 12 4 -7 14 -3 -16 6 -4 9 18 -8 10 6 -17
Output
9