

Problem Set 2

1) Hulk was in a great trouble. He was trapped in an alternate dimension and the only way to get out of it was to solve a problem. He has to keep on trying to get him out of that place. The condition is that he would be providing an array of number to the trap. The trap will use the numbers as input for a coding problem which will then decide the fate of Hulk.

The coding problem takes one array of integers as input and finds out whether there exists any number in the array which is greater than sum of all other integers in the array. If no such number exists, Thanos will not be set free.

Input Format:

First line of input contains the number N which is the number of members of array.

Second line of input consists of an array of N integers.

Output Format:

Print YES if such number exist and NO if no such number exists.

Sample Case:

Input:

4

1 3 9 4

Output:

YES

Explanation:

9 is greater than the sum of all other numbers of the array.

2) Iron Man was going for a party with other avengers. They all planned to test the intelligence of Iron Man. So, they all gave Iron Man a coding problem to solve without the help of Jarvis. The problem takes two integral arrays and find out the number of common integers in them.

Input Format:

First line of input contains the number N1 and N2, the sizes of array of array 1 and array 2.

Second and third lines consists of the elements of the respective arrays.

Output Format:

Print the number of common integers.

Sample Case:

Input:

5 3

3 7 2 8 5

5 7 9

Output:

2

Explanation:

There are two common integers 5 and 7.

3) Captain America was in a nice mood. He decided to play with numbers. So, he decided to take an integral array and count the number of distinct integers in the array. Help Captain America to solve this problem.

Input Format:

First line of input contains the number N which is the number of members of array.

Second line of input consists of an array of N integers.

Output Format:

Print the number of distinct integers.

Sample Case:

Input:

7

5 1 8 5 7 8 3

Output:

5

Explanation:

Since 5 and 7 are repeated so won't be counted twice.

4) Deadpool was again trying to build a team (yes, again!!). So, this time he needed intelligent people to work with him, so he devised a coding test to choose his team. He will only be choosing people who solve a particular coding problem. Deadpool takes the idea from Captain America and builds the same problem with a twist. Now, instead of counting distinct integers, you need to find the number of integers which only come once in the array and never repeat them.

Input Format:

First line of input contains the number N which is the number of members of array.

Second line of input consists of an array of N integers.

Output Format:

Print the number of integers which come only once in array.

Sample Case:

Input:

7

5 1 8 5 7 8 3

Output:

3

Explanation:

1, 7 and 3 are the integers which only repeat once in the array.

5) Thanos was with Gamora. They were discussing about various ways on how to get all infinity stones. One infinity stone named Coder Stone would only be available for Thanos if he solves a coding challenge. The challenge was to take an array of N integral pairs. The first element of each pair would denote the roll number of the student and the second element would contain the percentage of marks scored by them. Your task is to arrange them in descending order of their percentage of marks.

Input Format:

First line contains number N denoting number of pairs.

Next N lines consist of N pair of integers.

Output Format:

Arrange them as required and then print the roll numbers in descending order.

Sample Case:

Input:

5

5 78

3 12

4 90

1 45

2 36

Output:

4 5 1 2 3

Explanation:

Roll number 4 has highest percentage so placed first and so on.

6) Black Widow was once trying to solve a coding challenge. The challenge was going too tough for her. So, she decided to ask Thor for help. Thor was ready to help. The problem states to take three strings A, B and C as input. Your task is to check whether C can be formed by interleaving the strings A and B.

Input Format:

The first three lines will consist of 3 strings.

Output Format:

Print YES or NO as applicable.

Sample Case:

Input 1:

A = "aabcc"

B = "dbbca"

C = "aadbcbcbac"

Output 1:

YES

Explanation 1:

"aa" (from A) + "dbbc" (from B) + "bc" (from A) + "a" (from B) + "c" (from A)

Input 2:

A = "aabcc"

B = "dbbca"

C = "aadbbaacc"

Output 2:

NO

Explanation 2:

It is not possible to get C by interleaving A and B.

7) Iron Man has made a new car. To test that car, he invites Captain America.

There are N gas stations along a circular route where they both want to go, where the amount of gas at station i is A[i]. They have been provided with two integer arrays A and B of size N by Jarvis.

They both get in the car which has unlimited gas tank and it costs B[i] of gas to travel from station i to its next station (i+1). They begin the journey with an empty tank at one of the gas stations.

Return the minimum starting gas station's index if they can travel around the circuit once, otherwise return -1.

They can only travel in one direction. i to i+1, i+2, ... n-1, 0, 1, 2... Completing the circuit means starting at i and ending up at i again.

Input Format:

The first line of input is integer N, denoting the size of both arrays.

The 2nd and 3rd line of input will contain the array A and B.

Output Format:

Print the required result.

Sample Case:

Input 1:

2

A = [1, 2]

B = [2, 1]

Output 1:

1

Explanation 1:

If you start from index 0, you can fill in $A[0] = 1$ amount of gas. Now your tank has 1 unit of gas. But you need $B[0] = 2$ gas to travel to station 1.

If you start from index 1, you can fill in $A[1] = 2$ amount of gas. Now your tank has 2 units of gas. You need $B[1] = 1$ gas to get to station 0. So, you travel to station 0 and still have 1 unit of gas left over. You fill in $A[0] = 1$ unit of additional gas, making your current gas = 2. It costs you $B[0] = 2$ to get to station 1, which you do and complete the circuit.

8) Spider Man is learning from Mr. Tony Stark to develop new skills. They now have to develop a new program which would take an integral array. The task would be to find the length of longest palindromic subarray.

Input Format:

First line of input contains the number N which is the number of members of array.

Second line of input consists of an array of N integers.

Output Format:

Print length of largest palindromic subarray.

Sample Case:

Input:

5

2 9 2 4 5

Output:

3

Explanation:

2 9 2 is the required subarray.

9) Thor is looking to reconstruct his planet after it was destroyed by Thanos. He wants to develop a program which helps him in doing so. He is going to take an integral array as input and will find out triplets in the array whose sum is zero.

Input Format:

First line of input contains the number N which is the number of members of array.

Second line of input consists of an array of N integers.

Output Format:

Print the number of such triplets possible.

Sample Case:

Input:

6

3 7 -1 -2 -4 -3

Output:

2

Explanation:

(3, -1, -2) and (7, -4, -3) are the two possible triplets.

10) Thanos is again on his journey to find new planets to destroy (balance the universe, in his terms). He will attack a planet if a condition is satisfied. He runs a code and attacks if answer comes YES. The program takes a string as input and checks whether the string can be rearranged so as to make all odd length substring palindromic.

Input Format:

The input consists of a string S.

Output Format:

Print YES or No.

Sample Case:

Input:

oiooi

Output:

YES

Explanation:

It can be rearranged as oioio where every odd length subarray is palindrome.

