

A. Array Sorting

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Sorting arrays is traditionally associated with high-level languages. How hard can it be in FALSE? Sort the given array in non-descending order.

Input

The input consists of a single line of space-separated integers. The first number is n ($1 \leq n \leq 10$) — the size of the array. The following n numbers are the elements of the array ($1 \leq a_i \leq 100$).

Output

Output space-separated elements of the sorted array.

Examples

input

3 3 1 2

output

1 2 3

input

7 12 2 3 44 5 60 2

output

2 2 3 5 12 44 60

B. Fair Game

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Petya and Vasya decided to play a game. They have n cards (n is an even number). A single integer is written on each card.

Before the game Petya will choose an integer and after that Vasya will choose another integer (**different** from the number that Petya chose). During the game each player takes all the cards with number he chose. For example, if Petya chose number 5 before the game he will take all cards on which 5 is written and if Vasya chose number 10 before the game he will take all cards on which 10 is written.

The game is considered fair if Petya and Vasya can take all n cards, and the number of cards each player gets is the same.

Determine whether Petya and Vasya can choose integer numbers before the game so that the game is fair.

Input

The first line contains a single integer n ($2 \leq n \leq 100$) — number of cards. It is guaranteed that n is an even number.

The following n lines contain a sequence of integers a_1, a_2, \dots, a_n (one integer per line, $1 \leq a_i \leq 100$) — numbers written on the n cards.

Output

If it is impossible for Petya and Vasya to choose numbers in such a way that the game will be fair, print "NO" (without quotes) in the first line. In this case you should not print anything more.

In the other case print "YES" (without quotes) in the first line. In the second line print two distinct integers — number that Petya should choose and the number that Vasya should choose to make the game fair. If there are several solutions, print any of them.

Examples

input
4 11 27 27 11
output
YES 11 27

input
2 6 6
output
NO

input
6 10 20 30 20 10 20
output
NO

input
6 1 1 2 2 3 3
output
NO

Note

In the first example the game will be fair if, for example, Petya chooses number 11, and Vasya chooses number 27. Then they will take all cards — Petya will take cards 1 and 4, and Vasya will take cards 2 and 3. Thus, each of them will take exactly two cards.

In the second example fair game is impossible because the numbers written on the cards are equal, but the numbers that Petya and Vasya should choose should be distinct.

In the third example it is impossible to take all cards. Petya and Vasya can take at most five cards — for example, Petya can choose number 10 and Vasya can choose number 20. But for the game to be fair it is necessary to take 6 cards.

C. Sort the Array

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Being a programmer, you like arrays a lot. For your birthday, your friends have given you an array a consisting of n **distinct** integers.

Unfortunately, the size of a is too small. You want a bigger array! Your friends agree to give you a bigger array, but only if you are able to answer the following question correctly: is it possible to sort the array a (in increasing order) by reversing **exactly one** segment of a ? See definitions of segment and reversing in the notes.

Input

The first line of the input contains an integer n ($1 \leq n \leq 10^5$) — the size of array a .

The second line contains n distinct space-separated integers: $a[1], a[2], \dots, a[n]$ ($1 \leq a[i] \leq 10^9$).

Output

Print "yes" or "no" (without quotes), depending on the answer.

If your answer is "yes", then also print two space-separated integers denoting start and end (start must not be greater than end) indices of the segment to be reversed. If there are multiple ways of selecting these indices, print any of them.

Examples

input
3 3 2 1
output
yes 1 3
input
4 2 1 3 4
output
yes 1 2
input
4 3 1 2 4
output
no
input
2 1 2
output
yes 1 1

Note

Sample 1. You can reverse the entire array to get $[1, 2, 3]$, which is sorted.

Sample 3. No segment can be reversed such that the array will be sorted.

Definitions

A segment $[l, r]$ of array a is the sequence $a[l], a[l + 1], \dots, a[r]$.

If you have an array a of size n and you reverse its segment $[l, r]$, the array will become:

$a[1], a[2], \dots, a[l - 2], a[l - 1], a[r], a[r - 1], \dots, a[l + 1], a[l], a[r + 1], a[r + 2], \dots, a[n - 1], a[n]$.

D. Amusing Joke

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

So, the New Year holidays are over. Santa Claus and his colleagues can take a rest and have guests at last. When two "New Year and Christmas Men" meet, their assistants cut out of cardboard the letters from the guest's name and the host's name in honor of this event. Then they hung the letters above the main entrance. One night, when everyone went to bed, someone took all the letters of our characters' names. Then he may have shuffled the letters and put them in one pile in front of the door.

The next morning it was impossible to find the culprit who had made the disorder. But everybody wondered whether it is possible to restore the names of the host and his guests from the letters lying at the door? That is, we need to verify that there are no extra letters, and that nobody will need to cut more letters.

Help the "New Year and Christmas Men" and their friends to cope with this problem. You are given both inscriptions that hung over the front door the previous night, and a pile of letters that were found at the front door next morning.

Input

The input file consists of three lines: the first line contains the guest's name, the second line contains the name of the residence host and the third line contains letters in a pile that were found at the door in the morning. All lines are not empty and contain only uppercase Latin letters. The length of each line does not exceed 100.

Output

Print "YES" without the quotes, if the letters in the pile could be permuted to make the names of the "New Year and Christmas Men". Otherwise, print "NO" without the quotes.

Examples

input
SANTACLAUS DEDMOROZ SANTAMOROZDEDCLAUS
output
YES

input
PAPAINOEL JOULUPUKKI JOUNAPAOILELUPUKKI
output
NO

input
BABBONATALE FATHERCHRISTMAS BABCHRISTMASBONATALLEFATHER
output
NO

Note

In the first sample the letters written in the last line can be used to write the names and there won't be any extra letters left.

In the second sample letter "P" is missing from the pile and there's an extra letter "L".

In the third sample there's an extra letter "L".

E. Arrays

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given two arrays A and B consisting of integers, **sorted in non-decreasing order**. Check whether it is possible to choose k numbers in array A and choose m numbers in array B so that any number chosen in the first array is strictly less than any number chosen in the second array.

Input

The first line contains two integers n_A, n_B ($1 \leq n_A, n_B \leq 10^5$), separated by a space — the sizes of arrays A and B , correspondingly.

The second line contains two integers k and m ($1 \leq k \leq n_A, 1 \leq m \leq n_B$), separated by a space.

The third line contains n_A numbers a_1, a_2, \dots, a_{n_A} ($-10^9 \leq a_1 \leq a_2 \leq \dots \leq a_{n_A} \leq 10^9$), separated by spaces — elements of array A .

The fourth line contains n_B integers b_1, b_2, \dots, b_{n_B} ($-10^9 \leq b_1 \leq b_2 \leq \dots \leq b_{n_B} \leq 10^9$), separated by spaces — elements of array B .

Output

Print "YES" (without the quotes), if you can choose k numbers in array A and m numbers in array B so that any number chosen in array A was strictly less than any number chosen in array B . Otherwise, print "NO" (without the quotes).

Examples

input
3 3 2 1 1 2 3 3 4 5
output
YES

input
3 3 3 3 1 2 3 3 4 5
output
NO

input
5 2 3 1 1 1 1 1 1 2 2
output
YES

Note

In the first sample test you can, for example, choose numbers 1 and 2 from array A and number 3 from array B ($1 < 3$ and $2 < 3$).

In the second sample test the only way to choose k elements in the first array and m elements in the second one is to choose all numbers in both arrays, but then not all the numbers chosen in A will be less than all the numbers chosen in B : $3 \not< 3$.

F. Sale

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Once Bob got to a sale of old TV sets. There were n TV sets at that sale. TV set with index i costs a_i bellars. Some TV sets have a negative price — their owners are ready to pay Bob if he buys their useless apparatus. Bob can «buy» any TV sets he wants. Though he's very strong, Bob can carry at most m TV sets, and he has no desire to go to the sale for the second time. Please, help Bob find out the maximum sum of money that he can earn.

Input

The first line contains two space-separated integers n and m ($1 \leq m \leq n \leq 100$) — amount of TV sets at the sale, and amount of TV sets that Bob can carry. The following line contains n space-separated integers a_i ($-1000 \leq a_i \leq 1000$) — prices of the TV sets.

Output

Output the only number — the maximum sum of money that Bob can earn, given that he can carry at most m TV sets.

Examples

input
5 3 -6 0 35 -2 4
output
8

input
4 2 7 0 0 -7
output
7

G. Soldier and Badges

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Colonel has n badges. He wants to give one badge to every of his n soldiers. Each badge has a *coolness factor*, which shows how much it's owner reached. Coolness factor can be increased by one for the cost of one coin.

For every pair of soldiers one of them should get a badge with strictly higher factor than the second one. Exact values of their factors aren't important, they just need to have distinct factors.

Colonel knows, which soldier is supposed to get which badge initially, but there is a problem. Some of badges may have the same factor of coolness. Help him and calculate how much money has to be paid for making all badges have different factors of coolness.

Input

First line of input consists of one integer n ($1 \leq n \leq 3000$).

Next line consists of n integers a_i ($1 \leq a_i \leq n$), which stand for coolness factor of each badge.

Output

Output single integer — minimum amount of coins the colonel has to pay.

Examples

input
4 1 3 1 4
output
1

input
5 1 2 3 2 5
output
2

Note

In first sample test we can increase factor of first badge by 1.

In second sample test we can increase factors of the second and the third badge by 1.

H. April Fools' Problem (easy)

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

The marmots have prepared a very easy problem for this year's HC² – this one. It involves numbers n , k and a sequence of n positive integers a_1, a_2, \dots, a_n . They also came up with a beautiful and riveting story for the problem statement. It explains what the input means, what the program should output, and it also reads like a good criminal.

However I, Heidi, will have none of that. As my joke for today, I am removing the story from the statement and replacing it with these two unhelpful paragraphs. Now solve the problem, fools!

Input

The first line of the input contains two space-separated integers n and k ($1 \leq k \leq n \leq 2200$). The second line contains n space-separated integers a_1, \dots, a_n ($1 \leq a_i \leq 10^4$).

Output

Output one number.

Examples

input
8 5 1 1 1 1 1 1 1 1
output
5
input
10 3 16 8 2 4 512 256 32 128 64 1
output
7
input
5 1 20 10 50 30 46
output
10
input
6 6 6 6 6 6 6 6
output
36
input
1 1 100
output
100