HAI CON TRỎ

Mọi thắc mắc và góp ý về đề bài các bạn liên hệ với mình qua địa chỉ email:

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Các bạn có thể tham khảo video lời giải của mình tại

https://cutt.ly/WmI0f6O

TWO POINTERS

Phần này các bạn chịu khó dịch sang tiếng Việt rồi code nhé :D.

Problem A. Merging arrays

You are given two arrays, sorted in non-decreasing order. Merge them into one sorted array.

Input

The first line contains integers n and m, the sizes of the arrays ($1 \le n,m \le 10^5$). The second line contains n integers ai, elements of the first array, the third line contains m integers bi, elements of the second array ($-10^9 \le ai,bi \le 10^9$).

Output

Print n+m integers, the merged array.

Example

Input	Output
6 7 1 6 9 13 18 18 2 3 8 13 15 21 25	1 2 3 6 8 9 13 13 15 18 18 21 25

Source code tham khảo : https://ideone.com/2BE0KD

Problem B. Number of smaller

You are given two arrays, sorted in non-decreasing order. For each element of the second array, find the number of elements in the first array strictly less than it.

Input

The first line contains integers nn and mm, the sizes of the arrays ($1 \le n,m \le 10^5$). The second line contains n integers ai, elements of the first array, the third line contains m integers bi, elements of the second array ($-10^9 \le ai,bi \le 10^9$).
Output
Print m numbers, the number of elements of the first array less than each of the elements of the second array.

Example

Input	Output
6 7 1 6 9 13 18 18 2 3 8 13 15 21 25	1 1 2 3 4 6 6

Source code tham khảo : https://ideone.com/1I46TG

Problem C. Number of Equal

You are given two arrays aa and bb, sorted in non-decreasing order. Find the number of pairs (i,j) for which ai=bj.

Input
The first line contains integers nn and mm, the sizes of the arrays ($1 \le n,m \le 10^5$). The second line contains n integers ai, elements of the first array, the third line contains m integers bi, elements of the second array ($-10^9 \le ai,bi \le 10^9$).
Output

Print one number, the answer to the problem.

Example

Input	Output
8 7 1 1 3 3 3 5 8 8 1 3 3 4 5 5 5	11

Source code tham khảo : https://ideone.com/D6H0Eu

Problem D. Segment With Small Sum

Given an array of n integers ai. Let's say that the segment of this array a[l..r] ($1 \le l \le r \le n$) is good if the sum of elements on this segment is at most s. Your task is to find the longest good segment.

Input
The first line contains integers nn and s ($1 \le n \le 10^5$, $1 \le s \le 10^{18}$). The second line contains integers ai ($1 \le ai \le 10^9$).
Output
Print one integer, the length of the longest good segment. If there are no such segments, print -1.

Example

Input	Output
7 20 2 6 4 3 6 8 9	4

Source code tham khảo : https://ideone.com/9s5Wrp

Problem E. Segment With big Sum

Given an array of n integers aiai. Let's say that the segment of this array a[l..r] ($1 \le l \le r \le n$) is good if the sum of elements on this segment is at least s. Your task is to find the shortest good segment.

Input
The first line contains integers n and s ($1 \le n \le 10^5$, $1 \le s \le 10^{18}$). The second line contains integers ai ($1 \le ai \le 10^9$).
Output
Print one integer, the length of the shortest good segment. If there are no such segments, print -1.

Example

Input	Output
7 20 2 6 4 3 6 8 9	3

Source code tham khảo : https://ideone.com/yHw3X5

Problem F. Number of Segments with small sum

Given an array of n integers ai. Let's say that the segment of this array a[l..r] ($1 \le l \le r \le n$) is good if the sum of elements on this segment is at most s. Your task is to find the number of good segments.

Input

The first line contains integers n and s ($1 \le n \le 10^5$, $1 \le s \le 10^{18}$). The second line contains integers ai ($1 \le ai \le 10^9$).

Output

Print one integer, the number of good segments.

Example

Input	Output
7 20 2 6 4 3 6 8 9	19

Source code tham khảo : https://ideone.com/btqPNM

Problem G. Number of Segments with big sum

Given an array of n integers ai. Let's say that the segment of this array a[l..r] ($1 \le l \le r \le n$) is good if the sum of elements on this segment is at least s. Your task is to find the number of good segments.

Input

The first line contains integers n and s ($1 \le n \le 10^5$, $1 \le s \le 10^{18}$). The second line contains integers ai ($1 \le ai \le 10^9$).

Output

Print one integer, the number of good segments.

Example

Input	Output
7 20 2 6 4 3 6 8 9	9

Source code tham khảo : https://ideone.com/OVmDXq

Problem H. Segments with small set

Given an array of n integers ai. Let's say that a segment of this array a[l..r] ($1 \le l \le r \le n$) is good if there are no more than k unique elements on this segment. Your task is to find the number of different good segments.

Input

The first line contains integers n and k ($1 \le n \le 10^5$, $0 \le k \le n$). The second line contains integers ai ($1 \le ai \le 10^5$).

Output

Print one integer, the number of good segments.

Example

Input	Output
7 3 2 6 4 3 6 8 3	20

Source code tham khảo : https://ideone.com/KylMsG

Problem I. Segment with small Spread

Given an array of n integers ai. Let's say that a segment of this array a[l..r] ($1 \le l \le r \le n$) is good if the difference between the maximum and minimum elements on this segment is at most k. Your task is to find the number of different good segments.

Input

The first line contains integers n and k ($1 \le n \le 10^5$, $0 \le k \le 10^{18}$). The second line contains integers ai ($1 \le ai \le 10^{18}$).

Output

Print the number of good segments.

Example

Input	Output
7 3 2 6 4 3 6 8 9	16

Source code tham khảo : https://ideone.com/DRjAS5

Problem J. Two Sum

You are given an array of nn integers, and your task is to find two values (at distinct positions) whose sum is xx.

Input

The first input line has two integers nn and xx: the array size and the target sum.

The second line has nn integers a1,a2,…,ana1,a2,…,an: the array values.

Output

Print two integers: the positions of the values. If there are several solutions, you may print any of them. If there are no solutions, print IMPOSSIBLE.

Constraints

- $1 \le n \le 2 \cdot 10^5$
- $1 \le x, a_i \le 10^9$

Example

Input:
4 8
2 7 5 1
Output:
2 4

Source code tham khảo : https://ideone.com/SBpU0q