Count Inversions 2

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Note : This is the harder version of the same inversion count question.

Given an arary of integers A , you are supposed to find the number of inversions in the array.

Recall that an inversion in a sequence S is a pair of elements x and y such that x appears before y in S but x > y.

The number of inversions are roughly around $nlogn$

Input

The first line contains the number of elements in the array n ($0 \leq n \leq 10^5$)

The second line contains the elements separated by a space. ($0 \leq A[i] \leq 10^9$)

Output

You have to return a lower case character after taking modulo(%) of total number of inversions with 26. where 0 denotes 'a' and 25 denotes 'z'.

Example

standard input	standard output
5 1 20 6 4 5	f

Note

These are the 5 inversions in the above array (20,6) (20,4) (20,5) (6,4) (6,5)