Problem A. Wareta Ringo

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

You are given an array a of size n and q queries. In each query you are given two integers l, r ($1 \le l \le r \le n$), you need to partition subarray $a_l, a_{l+1}, \ldots, a_r$ into minimal number of increasing subarrays. Output this number for each query.

Input

First line contains two integers n, q - size of array and number of queries. Second line contains n integers - array a ($1 \le a_i \le 10^5$). Next q lines contain two integers l, r.

Output

Output q lines - answer to the queries.

Example

standard input	standard output
4 3 3 1 4 2 1 4 1 3 4 4	3 2 1

Note

Subarray $a_l, a_{l+1}, \ldots, a_r$ is called increasing if for each $l \le i \le r - 1$ condition $a_i < a_{i+1}$ is satisfied.

Answer to the queries of the first testcase:
[3, 1, 4, 2] - [3], [1, 4], [2]
[3, 1, 4] - [3], [1, 4]
[4] - [4]

Problem B. Another one easy BST problem

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

You are given implementation of Binary Search Tree. You need to introduce new feature to the Binary Search Tree. It must contain not only elements, but the number of copies of them too. Moreover, Binary Search Tree should not contain duplicate nodes.

Remember, when you remove some element, you delete it from Binary Search Tree if and only if it has a single appearance there. Otherwise you delete only one copy of element.

So, you are given several queries, each of them is of type '*insert* X', '*delete* X' or '*cnt* X'. You must answer on each query of the last type. The answer is the number of copies of X in Binary Search Tree.

To complete the task you need to download solution code from piazza.com and make some extra changes in it. Remaining code was written for you.

Input

The first line contains single integer Q - number of queries ($1 \leqslant Q \leqslant 10^3$). Each of the next Q lines contains one query.

Output

Print answer on each query of type '*cnt* X'.

Examples

standard input	standard output
4 insert 1 cnt 1 insert 1 cnt 1	1 2
8 insert 1 cnt 1 insert 1 cnt 1 delete 1 cnt 1 delete 1 cnt 1	1 2 1 0

Problem C. Simple Merge

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

Given a set of strings print the set sorted according to their size. If the size of the strings are equal, must maintain the original order of the set.

Input

The first line of input has an integer T that indicates the number of sets of strings, each set may contain between 1 and 50 inclusive elements, and each of the strings of the set may contain between 1 and 50 inclusive characters('a' to 'z').

Output

The output should contain the set of input strings ordered by the length of strings.A blank space must be printed between two words.

Examples

standard input	standard output
3 ab cd e j asd ljffg df a a b b c c xy yx zxy zx xzy xxx	e j ab cd df asd ljffg a a b b c c xy yx zx zxy xzy xxx
4 aabc ddfd fbbe f baaad fddf badcf aedbe cdb ae bbd ada bc eaced dadab b aabc fbee bedaf edde fcaa adbf beec	f aabc ddfd fbbe baaad ae cdb bbd fddf badcf aedbe b bc ada aabc fbee eaced dadab edde fcaa adbf beec bedaf

Note

You can solve this problem using mergesort or quicksort algorithm

Problem D. Mike and Pillars

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

Mike is a short heighted person. He is standing facing N pillars of different heights with i-th pillar having height h_i. He tries to see all the possible pillars. He wants to know that how many buildings will he be able to see in the range $[L, R]$ both inclusive.

Input

The first line contains an integer N denoting the number of pillars. Next line contains N integers denoting height of i-th pillar. Next line contains a single integer Q. Next Q lines contain pairs L and R respectively.

Constraints

$1 \leq N, Q \leq 10^5$

$0 \leq L \leq R \leq N - 1$

$1 \leq h \leq 10^9$

Output

For every Q queries print the number of buildings visible in the range $[L, R]$.

Example

standard input	standard output
7 5 2 3 7 9 8 11 4 0 6 1 5 2 6 3 4	4 4 4 2

Note

In query 1 5, 7, 9, 11 pillars are visible so answer is 4.

In query 2 2, 3, 7, 9 are visible so answer is 4.