BOI 2011

Copenhagen, Denmark
April 29 – May 3, 2011

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Growing Trees

Egon takes care of a garden with N apple trees. His responsibilities include two types of tasks: fertilizing the trees and computing some statistics about them.

For fertilizing the trees he has several bottles of *MegaBoostFertilizer*, which, when treated on trees, causes them to grow one centimeter up instantly. Every bottle has a limited capacity c_i, which determines the number of trees it can be applied to. Moreover, for each bottle there is a minimal height h_i of trees, which can be treated with it. Since Egon wants to have all his trees as big as possible, he always applies the fertilizer to the c_i smallest trees chosen from the trees that are at least h_i centimeters high.

When Egon computes statistics about trees he has to determine the number of trees whose height is in some given interval. Egon is quite busy working in the garden, so he asked you to write a program, that given the list of his tasks, computes the statistics for him.

Input

The first line of the standard input contains two integers N and M denoting the number of trees in Egon's garden and the number of his tasks. The second line contains a sequence of N integers from the range $[1, N]$ describing the initial heights of the trees in centimeters. The following M lines describe the tasks in chronological order. Each of those lines begins with a character t_i ($t_i = $ F or $t_i = $ C), which describes the type of the task.

If $t_i = $ F then two integers c_i and h_i follow. Such a line means that Egon applies a bottle of *MegaBoostFertilizer* to the c_i smallest trees among those trees that are at least h_i centimeters high. When there are less than c_i trees of sufficient height, he applies the fertilizer to all such trees and discards the bottle with some fertilizer remaining.

If $t_i = $ C then two integers min_i and max_i follow. They denote that Egon has to compute the number of trees whose height H is between min_i and max_i centimeters ($min_i \leq H \leq max_i$).

Output

For every task of type C, output one line containing the number of apple trees that have the required height. The order of the results should conform to the order of type C tasks in the input.

Constraints

$1 \leq N, M \leq 100\,000$;
$1 \leq c_i \leq N, 0 \leq h_i \leq 1\,000\,000\,000$;
$1 \leq min_i \leq max_i \leq 1\,000\,000\,000$.
In test cases worth 40 points $1 \leq N \leq 7\,000$ and the number of type F tasks is at most $7\,000$.

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Example

Input	Output
5 7	3
1 3 2 5 2	0
F 2 1	5
C 3 6	
F 2 3	
C 6 8	
F 2 1	
F 2 2	
C 3 5	