Consider a data structure that stores an array of numbers $a_0, a_1, \ldots, a_{n-1}$. The following operations are to be performed on the data structure.

1. Given i and x, set the ith element in the array to a specified value x.
2. Given i and x, find the largest index j such that $1 \leq j \leq i$ and $a_j \leq x$. In other words, find the nearest element to the left of a_i (including a_i itself), such that it is at most x. If there is no such element, output -1.
3. Given a number x, output the length of the longest subarray such that all elements in the subarray are at most x. Note that a subarray contains consecutive elements from the given array. If all elements are greater than x, output 0.

Input Format
The first line of input gives the number n and the number m of operations to be performed, $1 \leq n, m \leq 10^5$. The next line contains n space separated integers that give the initial values of the a_i, $0 \leq a_i \leq 10^9$. The next m lines specify the operations. An operation is specified by the letters A, I or L, corresponding to assign, index, length. An A or I operation will be followed by two integers, the values of i and x. The L operation will be followed by a single integer giving the value of x. It is guaranteed that $0 \leq i < n$ and $0 \leq x \leq 10^9$.

Output Format Print out the results of the I and L operations in the order in which they are executed. Each result must be on a separate line which should contain only one integer. If you implement only one of the operations, print a 0 as the result for the other operation. Both will be evaluated separately, but the output should be the same.

Sample Input	Sample Output
4 5	2
2 1 0 3	1
L 1	2
A 2 4	
I 3 1	
A 1 3	
L 3	