K RMQ with Shifts

Input: Standard Input
Output: Standard Output

In the traditional RMQ (Range Minimum Query) problem, we have a static array A. Then for each query (L, R) (L<=R), we report the minimum value among A[L], A[L+1], …, A[R]. Note that the indices start from 1, i.e. the left-most element is A[1].

In this problem, the array A is no longer static: we need to support another operation shift(i_1, i_2, i_3, …, i_k) (i_1<i_2<...<i_k, k>1): we do a left "circular shift" of A[i_1], A[i_2], …, A[i_k].

For example, if A={6, 2, 4, 8, 5, 1, 4}, then shift(2, 4, 5, 7) yields {6, 8, 4, 5, 4, 1, 2}. After that, shift(1,2) yields {8, 6, 4, 5, 4, 1, 2}.

Input

There will be only one test case, beginning with two integers *n*, *q* (1<=*n*<=100,000, 1<=*q*<=250,000), the number of integers in array A, and the number of operations. The next line contains *n* positive integers not greater than 100,000, the initial elements in array A. Each of the next *q* lines contains an operation. Each operation is formatted as a string having no more than 30 characters, with no space characters inside. All operations are guaranteed to be valid. **Warning:** The dataset is large, better to use faster I/O methods.

Output

For each query, print the minimum value (rather than index) in the requested range.

Sample Input	Output for Sample Input
7 5 6 2 4 8 5 1 4 query(3,7) shift(2,4,5,7) query(1,4) shift(1,2) query(2,2)	1 4 6

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