G. Periodic RMQ Problem

time limit per test: 4 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

You are given an array a consisting of positive integers and q queries to this array. There are two types of queries:

- $1\ l\ r\ x$ — for each index i such that $l \le i \le r$ set $a_i = x$.
- $2\ l\ r$ — find the minimum among such a_i that $l \le i \le r$.

We decided that this problem is too easy. So the array a is given in a compressed form: there is an array b consisting of n elements and a number k in the input, and before all queries a is equal to the concatenation of k arrays b (so the size of a is $n \cdot k$).

Input

The first line contains two integers n and k ($1 \le n \le 10^5$, $1 \le k \le 10^4$).

The second line contains n integers — elements of the array b ($1 \le b_i \le 10^9$).

The third line contains one integer q ($1 \le q \le 10^5$).

Then q lines follow, each representing a query. Each query is given either as $1\ l\ r\ x$ — set all elements in the segment from l till r (including borders) to x ($1 \le l \le r \le n \cdot k$, $1 \le x \le 10^9$) or as $2\ l\ r$ — find the minimum among all elements in the segment from l till r ($1 \le l \le r \le n \cdot k$).

Output

For each query of type 2 print the answer to this query — the minimum on the corresponding segment.

Examples

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

input
3 2 1 2 3 5 2 4 4 1 4 4 5 2 4 4 1 1 6 1 2 6 6
output
1 5 1