

B. Minimum Prime Number

time limit per test: 6 seconds
memory limit per test: 512 megabytes
input: standard input
output: standard output

Arwa loves prime numbers and knows that *Heba* loves Mathematics, so she wants to make the problem harder for *Heba*, she will give her an array of N elements and ask her to do Q commands on the array, and there are 2 types of commands. They are:

MULTIPLY L R VAL - you have to multiply all numbers in the range of L to R [inclusively] to VAL , where $(1 \leq L \leq R \leq N)$.

GET L R - output a line containing a single integer P(the minimum prime number) that there exists at least one integer A_i that $(A_i \% P! = 0)$ such that $(L \leq i \leq R)$.

As you see it is a hard problem for *Heba* to solve, can you help him?

Input

The first line contains two integers N ($1 \leq N \leq 10^6$) and Q ($1 \leq Q \leq 10^6$) N - the number of array elements and Q - the number of commands.

The next line contains the initial state of the array: A_1, A_2, \dots, A_N ($1 \leq A_i \leq 300$), A_i is an integer.

The next Q lines contain one command in each of the following forms:

MULTIPLY L R VAL ($1 \leq L \leq R \leq N, 2 \leq VAL \leq 300$)

GET L R ($1 \leq L \leq R \leq N$)

There are no limitations on multiplication.

Output

for each query of the form *GET L R*, print the minimum prime number that isn't dividable by at least one number in the range between L and R [inclusively].

Example

| input | Copy |
|---------------------------------------------------------------------------------------|------|
| 5 5 2 2 2 2 2 GET 1 5 MULTIPLY 1 5 3 GET 1 5 MULTIPLY 1 4 5 GET 1 5 | |
| output | Copy |
| 3 5 5 | |

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