J Maximal Non-Coprime

Given an integer array a of length N ($1 \le N \le 10^4$, $1 \le a_i \le 10^3$), perform Q queries ($1 \le Q \le 10^4$).

Queries will can be in the following formats:

- C i v: change the number at index i (0-indexed) to the value v ($1 \le v \le 10^3$).
- F $i \ j \ v$: find the maximal number k with index between i and j (inclusive) such that $gcd(k,v) \neq 1$. In other words, k is the maximum in a[i...j] such that k shares a factor (other than 1) with $v \ (1 \leq v \leq 10^3)$. If there is no such number, output -1.

Note: There are 168 primes less than 10^3 .

SHORT NAME: max_noncoprime

INPUT FORMAT:

The first line of input contains N, the length of the array a $(1 \le N \le 10^4)$.

The second line contains the elements of array a ($1 \le a_i \le 10^3$), separated by spaces.

The third line contains the number of queries Q ($1 \le Q \le 10^4$).

The fourth through 3+Q lines (inclusive) contain each query. Queries are either of the format C i v or F i j v $(0 \le i, j \le N-1, 1 \le v \le 10^3)$.

OUTPUT FORMAT:

For each query that starts with F, output the maximal integer k in a[i...j] such that $gcd(k, v) \neq 1$, or -1 if k does not exist.

SAMPLE INPUT:

2 3 49 25

6

C 0 10

F 1 2 5

F 0 3 5

C 3 5

F 0 3 5

F 1 3 7

SAMPLE OUTPUT:

-1

25

10

49