

D. Traffic Jams in the Land

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Some country consists of $(n + 1)$ cities, located along a straight highway. Let's number the cities with consecutive integers from 1 to $n + 1$ in the order they occur along the highway. Thus, the cities are connected by n segments of the highway, the i -th segment connects cities number i and $i + 1$. Every segment of the highway is associated with a positive integer $a_i > 1$ — the period of traffic jams appearance on it.

In order to get from city x to city y ($x < y$), some drivers use the following tactics.

Initially the driver is in city x and the current time t equals zero. Until the driver arrives in city y , he performs the following actions:

- if the current time t is a multiple of a_x , then the segment of the highway number x is now having traffic problems and the driver stays in the current city for one unit of time (formally speaking, we assign $t = t + 1$);
- if the current time t is not a **multiple** of a_x , then the segment of the highway number x is now clear and that's why the driver uses one unit of time to move to city $x + 1$ (formally, we assign $t = t + 1$ and $x = x + 1$).

You are developing a new traffic control system. You want to consecutively process q queries of two types:

1. determine the final value of time t after the ride from city x to city y ($x < y$) assuming that we apply the tactics that is described above. Note that for each query t is being reset to 0.
2. replace the period of traffic jams appearing on the segment number x by value y (formally, assign $a_x = y$).

Write a code that will effectively process the queries given above.

Input

The first line contains a single integer n ($1 \leq n \leq 10^5$) — the number of highway segments that connect the $n + 1$ cities.

The second line contains n integers a_1, a_2, \dots, a_n ($2 \leq a_i \leq 6$) — the periods of traffic jams appearance on segments of the highway.

The next line contains a single integer q ($1 \leq q \leq 10^5$) — the number of queries to process.

The next q lines contain the descriptions of the queries in the format c, x, y (c — the query type).

If c is character 'A', then your task is to process a query of the first type. In this case the following constraints are satisfied: $1 \leq x < y \leq n + 1$.

If c is character 'C', then you need to process a query of the second type. In such case, the following constraints are satisfied: $1 \leq x \leq n, 2 \leq y \leq 6$.

Output

For each query of the first type output a single integer — the final value of time t after driving from city x to city y . Process the queries in the order in which they are given in the input.

Examples

input
10
2 5 3 2 3 5 3 4 2 4
10
C 10 6
A 2 6

A 1 3
C 3 4
A 3 11
A 4 9
A 5 6
C 7 3
A 8 10
A 2 5

output

5
3
14
6
2
4
4