Time limit: 3.000 seconds

Range Minimum Query

The Problem

Suppose there is an array A of size n, (index range: 0 to n-1) each containing an integer value. We want either to find a minimum element among elements within a range or to change an element in A. There are three kinds of command: (q l r), (c id v) and (s −1 −1). Command (q l r) requires to find the index of array A which contain the minimum element in range [l, r] in A. **If more than one elements have the same minimum value in range [l, r], minimum index should be returned.** Command (c id v) means to change A[id] to v. Command (s −1 −1) indicates the last command which needs not be processed.

The Input

The first line of the input contains an integer n($1 \leq n \leq 1{,}000{,}000$) which indicates the size of array A. Following n integers indicate A[i] for i=0, 1, ..., n-1. Each A[i] can be represented as an integer type.
Several command lines follow, each contains one command. Each is either (q l r) or (c id v), meaning of each is explained above. Last command is (s −1 −1).

Input file name: rmq.inp

The Output

For each commad (q l r), find the index of minimum element and sum up all the indices and print out the least 5-digits of the sum.

Output file name: rmq.out

Sample Input

```
20
34 34 34 57 36 89 47 10 53 48 37 52 95 97 82 66 46 72 70

q 0 4   // min idx: 0

q 6 10 // min idx : 7

c 8 −10

q 7 10 // min idx: 8

q 3 11 // min idx: 8

q 4 9 // min idx: 8

c 10 -20

q 0 19 // min idx: 10

q 0 5 // min idx: 0

q 11 19 // min idx 16

s −1 -1
```

Sample Output

```
57
```