

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 $i=0, 1, \dots, n-1$. 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 command (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
```