

## Problem A

We maintain a database of the historical temperature data. For each of the days  $i = 1, \dots, n$  ( $n \leq 100\,000$ ), we record the average temperature  $t_i$  (where  $t_i$  is an integer and  $-50 \leq t_i \leq 50$ ). Occasionally, we need to correct an error and change one of the values. Also, we need to test the hypotheses of form “for  $a \leq i \leq b$ , the temperature is approximately  $ci + d$ ”; to this end, we need to compute

$$\text{dev}(a, b, c, d) = \sqrt{\frac{\sum_{i=a}^b (t_i - ci - d)^2}{b - a + 1}}.$$

### Input and output

The first line contains the integer  $n$ , followed by  $n$  integers  $t_1, \dots, t_n$ . Each of the following lines is of form

- “C  $i$   $t$ ”: change  $t_i$  to  $t$ , or
- “D  $a$   $b$   $c$   $d$ ”, where  $1 \leq a \leq b \leq n$  are integers and  $c$  and  $d$  are real numbers, write out a single line containing the value of  $\text{dev}(a, b, c, d)$  rounded to two decimal places. It is guaranteed that this value is at most 100.

### Example

Input:

```
3 1 2 3
D 2 3 0 4
C 2 3
D 1 3 0.5 1
```

Output:

```
1.58
0.71
```