



# Median Updates

by HackerRank

Problem

Submissions

Leaderboard

Discussions

Editorial



Topics

The median of  $M$  numbers is defined as the middle number after sorting them in order if  $M$  is odd. Or it is the average of the middle two numbers if  $M$  is even. You start with an empty number list. Then, you can add numbers to the list, or remove existing numbers from it. After each add or remove operation, output the median.

**Example:**

For a set of  $M = 5$  numbers **9, 2, 8, 4, 1** the median is the third number in the sorted set **1, 2, 4, 8, 9**, which is **4**. Similarly, for a set of  $M = 4$  numbers, **5, 2, 10, 4**, the median is the average of the second and the third element in the sorted set **2, 4, 5, 10**, which is  $(4 + 5)/2 = 4.5$ .

**Input:**

The first line is an integer,  $N$ , that indicates the number of operations. Each of the next  $N$  lines is either  $a\ x$  or  $r\ x$ .  $a\ x$  indicates that  $x$  is added to the set, and  $r\ x$  indicates that  $x$  is removed from the set.

**Output:**

For each operation: If the operation is *add*, output the median after adding  $x$  in a single line. If the operation is *remove* and the number  $x$  is not in the list, output *Wrong!* in a single line. If the operation is *remove* and the number  $x$  is in the list, output the median after deleting  $x$  in a single line. (If the result is an integer DO NOT output decimal point. And if the result is a real number, DO NOT output trailing 0s.)

**Note**

If your median is 3.0, print only 3. And if your median is 3.50, print only 3.5. Whenever you need to print the median and the list is empty, print *Wrong!*

**Constraints:**

$$0 < N \leq 10^5$$

For each  $a\ x$  or  $r\ x$ ,  $x$  will always be a signed integer (which will fit in 32 bits).

**Sample Input:**

```
7
r 1
a 1
a 2
a 1
r 1
r 2
r 1
```

**Sample Output:**

```
Wrong!
1
1.5
1
1.5
1
Wrong!
```

**Note:** As evident from the last line of the input, if after remove operation the list becomes empty, you have to print *Wrong!*.

Submissions: [6922](#)

Max Score: 70

Difficulty: Hard

Rate This Challenge:



Need Help?

[Multi-set](#)[More](#)

Current Buffer (saved locally, editable)

C++

```
1 ▶ ↔
21 ▼ void median(vector<char> s,vector<int> X) {
22
23
24 }
25 ▼ int main(void){
26
27 //Helpers for input and output
28
29 int N;
30 cin >> N;
31
32 vector<char> s;
33 vector<int> X;
34 char temp;
35 int tempint;
36 ▼ for(int i = 0; i < N; i++){
37     cin >> temp >> tempint;
38     s.push_back(temp);
39     X.push_back(tempint);
40 }
41
42 median(s,X);
43 return 0;
44 }
45
```

Line: 1 Col: 1

[Upload Code as File](#) ☐ Test against custom input[Run Code](#)[Submit Code](#)Join us on IRC at [#hackerrank](#) on freenode for hugs or bugs.[Contest Calendar](#) | [Blog](#) | [Scoring](#) | [Environment](#) | [FAQ](#) | [About Us](#) | [Support](#) | [Careers](#) | [Terms Of Service](#) | [Privacy Policy](#) | [Request a Feature](#)