

H. MEDIAN

Mr Phuong is organizing a special "Competitive Programming" module to prepare his students for the upcoming ICPC.

At any time, Mr Phuong wants to calculate the median ability of his class so that he can have a good problem set that fits his students' abilities.

His class has N students, numbered 0 to $N-1$, with their ability $a[i]$ in increasing order.

If N is odd, the median equals to $a[N/2]$.

If N is even, the median equals to $(a[N/2 - 1] + a[N/2]) / 2$

There are Q events, each is in 1 of 3 types:

- IN x - a student with ability x joined
- OUT x - a student with ability x left the class
- MEDIAN - Mr Phuong wants to get the median value.

Your task is to help Mr Phuong answer his queries.

INPUT

The first line contains an integer Q - the number of queries.

Then Q lines followed, each describing a query in the above format.

In the beginning, the class has no member and you can assume that when you have query OUT x , there was a corresponding IN x before that.

OUTPUT

For each median query, you should print a single number - the median at this time.

Sample Input	Sample Output
22	1
IN 1	1.5
MEDIAN	2
IN 2	2.5
MEDIAN	3
IN 3	3.5
MEDIAN	4
IN 4	4.5
MEDIAN	5
IN 5	5
MEDIAN	6
OUT 1	
MEDIAN	
IN 6	
MEDIAN	
OUT 2	
MEDIAN	
IN 7	
MEDIAN	
OUT 5	
MEDIAN	
IN 8	

MEDIAN	
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