Median plays an important role in the world of statistics. By definition, it is a value which divides an array into two equal parts. In this problem you are to determine the current median of some long integers. Suppose, we have five numbers {1,3,6,2,7}. In this case, 3 is the median as it has exactly two numbers on its each side. {1,2} and {6,7}. If there are even number of values like {1,3,6,2,7,8}, only one value cannot split this array into equal two parts, so we consider the average of the middle values {3,6}. Thus, the median will be (3+6)/2 = 4.5. In this problem, you have to print only the integer part, not the fractional. As a result, according to this problem, the median will be 4 !

Input

The input file consists of series of integers X ($0 \leq X < 2^{31}$) and total number of integers N is less than 10000. The numbers may have leading or trailing spaces.

Output

For each input print the current value of the median.

Sample Input

```
1
3
4
60
70
50
2
```

Sample Output

```
1
2
3
3
4
27
4
```