the $\lfloor \frac{n+1}{2} \rfloor$ -th smallest element in the array. For example, the median of array $(4, 8, 7, 6)$ is 6, while the median of array $(4, 8, 7, 6, 3)$ is 6.

Given an integer array $(a_1, a_2, \cdots, a_n)$, please output the medians for each prefix of the array.

That is, please output the medians of (a_1), (a_1, a_2), $\cdots$, $(a_1, a_2, \cdots, a_n)$.

Input

The first line is an integer n, being the size of the array.

The next line contains n integers, being the integer array.

Restrictions

- $1 \leq n \leq 10^6$
- $1 \leq a_i \leq 10^8$ for $i = 1, 2, \cdots, n$

Output

Please output the answers in one line.

Sample Input 1

```
5
4 8 7 6 3
```

Sample Output 1

```
4 4 7 6 6
```

Submissions

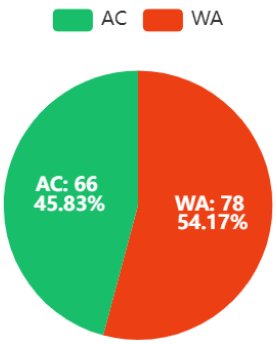
Rankings

View Contest

Information

ID	2
Time Limit	2000MS
Memory Limit	256MB
IO Mode	Standard IO
Created By	ta_redleaf
Level	Hidden
Score	100
Tags	Show

Statistic Details



Language: C++ Theme: Solarized Light

```
1
```

You have solved the problem | Submit for Sample Test | Submit

```
4 8 7 6 3
```