Median

Description

Given a sequence of non-negative integers $A[1 \ldots n]$, you are asked to find the median of $A[1 \ldots 2k-1]$ for all $1 \leq k \leq \lfloor \frac{n+1}{2} \rfloor$.

Input

The first line of the input contains a positive integer n .

The second line contains n non-negative integers denoting $A[1 \ldots n]$ separated by spaces.

Output

Output k lines $(k = \lfloor \frac{n+1}{2} \rfloor)$, the i-th line of which contains an integer indicating the median of $A[1 \ldots 2i-1]$.

Sample Input/Output

Input

```
7
1 3 5 7 9 11 6
```

Output

```
1
3
5
6
```

Constraint

$1 \leq n \leq 10^5, 0 \leq A[i] \leq 10^9$.