

## Problem F. Lonely Dreamoon 2

Input file: *standard input*  
Output file: *standard output*  
Time limit: 1 second  
Memory limit: 512 mebibytes

Dreamoon, who doesn't have a girlfriend, often goes for a walk along some streets in Taipei while thinking about problems from algorithm competitions. Unfortunately, there are so many couples acting lovey-dovey on the street that Dreamoon can not focus on thinking about those problems.

One day, despite the love birds everywhere, Dreamoon discovered a problem input containing an integer sequence:  $a_1, a_2, a_3, \dots, a_N$ .

Dreamoon thought: because I'm single, every pair of consecutive numbers should have a large difference! This is, Dreamoon wants to reorder the sequence to make the value  $\min_{i=2..N} (|a_i - a_{i-1}|)$  as large as possible.

So Dreamoon turned on Drazil, who does have a girlfriend, and forced Drazil to fulfill the above condition by reordering the integer sequence. Please help poor Drazil  $> _ <$

### Input

The input consists of two lines. The first line contains an integer  $N$ . The second line consists of  $N$  integers  $a_1, a_2, \dots, a_N$ .

- $2 \leq N \leq 2 \times 10^5$
- $-10^9 \leq a_i \leq 10^9$

### Output

Output a single line consisting of  $N$  integers, denoting the integer sequence  $a$  after reordering. For this reordering, the value  $\min_{i=2..N} |a_i - a_{i-1}|$  must be the largest possible among all reorderings of the input sequence. If there are several possible answers, output any one of them.

### Examples

standard input	standard output
3 3 1 5	3 5 1
4 -1 -1 1 1	1 -1 1 -1