Problem Q. Sorted Adjacent Differences

Time limit 1000 ms
Mem limit 262144 kB

You have array of n numbers $a_1, a_2, \ldots, a_n$.

Rearrange these numbers to satisfy $|a_1 - a_2| \le |a_2 - a_3| \le \ldots \le |a_{n-1} - a_n|$, where $|x|$ denotes absolute value of x. It's always possible to find such rearrangement.

Note that all numbers in a are not necessarily different. In other words, some numbers of a may be same.

You have to answer independent t test cases.

Input

The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases.

The first line of each test case contains single integer n ($3 \le n \le 10^5$) — the length of array a. It is guaranteed that the sum of values of n over all test cases in the input does not exceed 10^5.

The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($-10^9 \le a_i \le 10^9$).

Output

For each test case, print the rearranged version of array a which satisfies given condition. If there are multiple valid rearrangements, print any of them.

Sample 1

Input	Output
2 6 5 -2 4 8 6 5 4 8 1 4 2	5 5 4 6 8 -2 1 2 4 8

Note

In the first test case, after given rearrangement,
$|a_1 - a_2| = 0 \le |a_2 - a_3| = 1 \le |a_3 - a_4| = 2 \le |a_4 - a_5| = 2 \le |a_5 - a_6| = 10$. There are other possible answers like "`5 4 5 6 -2 8`".

In the second test case, after given rearrangement,
$|a_1 - a_2| = 1 \le |a_2 - a_3| = 2 \le |a_3 - a_4| = 4$. There are other possible answers like "`2 4 8`

1".