DMOPC '19 Contest 2 P1 - Box and Whiskers

Time limit: 2.0s **Memory limit:** 64M

Veshy is struggling in data management class. Veshy forgot how to make a box and whisker plot, so he wants you to tell him the important values to make the plot of the N data points $a_1, a_2, \ldots, a_N$. He gives you: the **minimum**, **maximum**, Q_1 (Quartile 1 or median of the first $\left\lfloor \frac{N}{2} \right\rfloor$ elements), Q_2 (Quartile 2 or median of the entire data), and Q_3 (Quartile 3 or median of the last $\left\lfloor \frac{N}{2} \right\rfloor$ elements) of the sorted list.
For example, if the data set was $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, the important values in their respective order would be: 1, 10, 3, 5.5, 8
Another example, if the data set was $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11\}$, the important values in their respective order would be: 1, 11, 3, 6, 9

Constraints

In all tests,
$5 \leq N \leq 10^5$
$0 \leq a_i \leq 10^6$
All numbers are guaranteed to be whole numbers.

Input Specification

The first line contains a number, N, the number of data points.
The second line contains N numbers separated by spaces, the data points Veshy gives you: $a_1, a_2, \ldots, a_N$
Note: the data points are not guaranteed to be in sorted order.

Output Specification

Output the minimum, maximum, Q_1, Q_2, Q_3, in that order separated by spaces on a single line.
Note: your answer will be judged as correct if it is within an absolute or relative error of 10^{-6}.

Sample Input 1

```
10
1 2 3 4 5 6 7 8 9 10
```

Sample Output 1

```
1 10 3 5.5 8
```

Sample Input 2

```
11
1 2 3 4 5 6 7 8 9 10 11
```

Sample Output 2

```
1 11 3 6 9
```