Day 1: Quartiles

Objective

In this challenge, we practice calculating *quartiles*. Check out the Tutorial tab for learning materials and an instructional video!

Task

Given an array, X, of n integers, calculate the respective first quartile (Q_1), second quartile (Q_2), and third quartile (Q_3). It is guaranteed that Q_1, Q_2, and Q_3 are integers.

Input Format

The first line contains an integer, n, denoting the number of elements in the array.
The second line contains n space-separated integers describing the array's elements.

Constraints

- $5 \le n \le 50$

- $0 < x_i \le 100$, where x_i is the ith element of the array.

Output Format

Print 3 lines of output in the following order:

1. The first line should be the value of Q_1.

2. The second line should be the value of Q_2.

3. The third line should be the value of Q_3.

Sample Input

```
9
3 7 8 5 12 14 21 13 18
```

Sample Output

```
6
12
16
```

Explanation

$X = \{3, 7, 8, 5, 12, 14, 21, 13, 18\}$. When we sort the elements in non-decreasing order, we get $X = \{3, 5, 7, 8, 12, 13, 14, 18, 21\}$. It's easy to see that $median(X) = 12$.

As there are an odd number of data points, we do not include the median (the central value in the ordered list) in either half:

Lower half (L): 3, 5, 7, 8

Upper half (U): 13, 14, 18, 21

Now, we find the quartiles:

- Q_1 is the *median*(L). So, $Q_1 = \frac{5+7}{2} = 6$.

- Q_2 is the *median*(X). So, $Q_2 = 12$.

- Q_3 is the *median*(U). So, $Q_3 = \frac{14+18}{2} = 16$.