

Task: SEQ

Sequence

english

BOI 2015, day 0. Available memory: 256 MB.

29.04.2015

A sequence of n integers a_1, a_2, \dots, a_n can be reordered in many ways. For every ordering, we can calculate its *disorder factor* which is the sum of absolute differences between consecutive elements. For instance, the disorder factor for the initial ordering is equal to $|a_1 - a_2| + |a_2 - a_3| + \dots + |a_{n-1} - a_n|$. Your task is to calculate the maximal possible disorder factor for any ordering of a given sequence of pairwise different integers, and the number of orderings for which it is attained.

Input

The first line of the input contains a positive integer n ($2 \leq n \leq 27$) specifying the length of the sequence. The second line contains n pairwise different integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 100\,000$).

Output

Your program should output two integers, each in a separate line. The first integer should specify the maximal possible disorder factor for an ordering of the sequence given in the input. The second integer should specify the number of orderings of the sequence which have this maximal disorder factor.

Examples

For the input data:

3
1 7 4

a correct result is:

9
4

Explanation to the examples: In the following table all 6 possible orderings of sequence 1 7 4 are shown. Four of them have the maximal disorder factor of 9.

Ordering	Disorder factor
1 7 4	9
1 4 7	6
7 1 4	9
7 4 1	6
4 1 7	9
4 7 1	9

Grading

Subtask	Conditions	Points
1	$n \leq 10$	20
2	only the first number in the output is graded	30
3	n is even	25
4	n is odd	25