Problem A. Anatoly Shalyto

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

Median of a multiset of integers is the smallest integer X such that at least half of the elements of the set are less than or equal to X.

Mode of a multiset of integers is the value that occurs the most times in the multiset. If there are multiple such values the mode is the smallest.

Imbalance of a multiset is the absolute difference between the median and the mode.

A multiset T is a **subset** of a multiset S if for every value the number of its occurrences in S isn't less than the number of its occurrences in T.

You are given a multiset of integers. Consider its non-empty subset with the largest imbalance. Print that imbalance.

Input

The first line contains a single integer n ($1 \le n \le 10^5$), size of the multiset.

The second line contains n integers a_i ($0 \le a_i < 10^9$, $a_i \le a_{i+1}$, elements of the multiset.

Output

Print a single integer — the largest imbalance of some subset of the given multiset.

Examples

standard input	standard output
4 1 2 8 8	6
5 2 2 2 8 8	0
5 1 2 3 4 5	3