

Problem H. Easter Gift

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

Wesley got an array of N elements (a_1, a_2, \dots, a_N) for Easter, and is eager to sort it (so that $a_1 \leq a_2 \leq \dots \leq a_N$). Bored, Wesley decided to make it harder on himself by only allowing himself to swap two elements if the absolute difference between them is less than or equal to K . Note that the elements can be anywhere; as long as their absolute difference is less than or equal to K , Wesley can swap them.

Unfortunately, Wesley quickly realized that it might not be possible to sort the array. He then wonders: what is the minimum value of K required to be able to sort the array?

Input

The first line contains an integer N , the number of elements in the array ($1 \leq N \leq 2 \cdot 10^5$).

The next line contains N integers a_1, a_2, \dots, a_N , the array itself ($1 \leq a_i \leq 10^{18}$).

Output

Output the minimum value of K required to be able to sort the array. If the elements are already sorted, you should output 0.

Example

standard input	standard output
8 1 4 4 2 7 14 12 10	2