

Second Minimum distance between two points

In the universe, it is proven that there exists a long, long 1D line. There are n points on that line, each point P_i on the coordinate x_i . All points are in distinct positions.

If points are close to each other, they are very happy since they can hang out with each other. This is why in this problem, you have to write a program that calculates the *second* minimum distance between any two given points.

In this problem, the *second minimum distance* means the second smallest element on the set of all possible distances. If you are confused with this definition, take a look at the notes.

Input

Your input consists of an arbitrary number of records, but no more than 5.

Each record starts with a line containing an integer n ($3 \leq n \leq 100,000$), the number of points. The next line contains n integers x_1, x_2, \dots, x_n ($-10^{18} \leq x_i \leq 10^{18}$), which are coordinates of the points P_1, P_2, \dots, P_n . It is guaranteed that all x_i are distinct.

The end of input is indicated by a line containing only the value -1 .

Output

For each input record, print the second minimum distance between any two given points, each in a separate line.

Example

Standard input	Standard output
3 5 3 1 4 -1 2 -3 4 -1	4 3

Notes

For the first example, P_1P_2 and P_2P_3 have distance 2, and P_1P_3 have distance 4. Therefore the second minimum distance is 4.

For the second example, P_1P_3 and P_2P_4 have distance 2, P_1P_2 have distance 3, P_1P_4 and P_2P_3 have distance 5, and P_3P_4 have distance 7. Therefore the second minimum distance is 3.

Time Limit

1 second.