

Problem A. Three words

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

— Say these three magical words.

— Longest Increasing Subsequence!

You are given sequence x which contains $0 \leq N \leq 10^5$ integer numbers: $0 \leq x_i < 10000$. You need to calculate length of Longest Increasing Subsequence of this sequence.

Increasing subsequence of sequence $x = x_0, x_1, \dots, x_{N-1}$ is:

$$x_{i_0}, x_{i_1}, \dots, x_{i_{K-1}} : 0 \leq i_0 < i_1 < \dots < i_{K-1} < N \cap x_{i_0} < x_{i_1} < \dots < x_{i_{K-1}}$$

You need to find maximum possible K .

Input

First line of input file contains single integer number: $0 \leq N \leq 10^5$ — length of initial sequence.

Second line contains N integer numbers divided by space character: $0 \leq x_i < 10000$ — initial sequence.

Output

Print single integer number K — length of longest increasing subsequence in x .

Examples

standard input	standard output
3 1 3 4	3
5 2 1 3 4 2	3
7 3 4 2 1 3 4 2	3

Problem B. Nails

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

You have found a wooden board with N nails on a straight line in it. The first thing you did with it — you've measured distance from to each nail to intersection of edge of the board and straight line on which nails are situated (coordinates of each nail). Just because you're a scientist!

Also, you have a thread and you can connect each pair of nails with it. You want to connect several pairs of nails so that each nail has at least one connection. Also, you don't want to waste thread, so, you want to minimize total length of thread used for that.

Input

First line contains one integer number $2 \leq N \leq 1000$ — number of nails.

Second line contains N integer numbers divided by space character — coordinates of each nail $0 \leq x_i \leq 10000$.

Output

Print one integer number — minimum total length of thread you need to connect nails such that each nail has at least one connection.

Examples

standard input	standard output
3 1 2 3	2
4 11 1 2 3	9
5 0 2 10 1 12	4