

The Closest Pair Problem

Given a set of points in a two dimensional space, you will have to find the distance between the closest two points.

Input

Input starts with an integer N ($0 \leq N \leq 10000$), which denotes the number of points in this set. The next N line contains the coordinates of N two-dimensional points. The first of the two numbers denotes the X-coordinate and the latter denotes the Y-coordinate separated by space. The value of the coordinates will be non-negative and less than 40000.

Output

A single line of output contains a floating point number (with four digits after the decimal point) which denotes the distance between the closest two points. If there is no such two points in the input whose distance is less than 10000, print the line 'INFINITY'.

Example

Sample Input	Sample Output
5 0 2 6 67 43 71 39 107 189 140	36.2215
3 0 0 10000 10000 20000 20000	INFINITY