

# Closest Pair

Time limit: 1 sec

Given a set of **N** points in a plane where each point is described by its coordinate **(x, y)**. Your task is to identify the minimum distance of pairs of these points.

To avoid the problem of floating point precision, we define the distance between the point  $(x_1, y_1)$  and  $(x_2, y_2)$  as  $((x_1 - x_2)^2 + (y_1 - y_2)^2)$ . Moreover, the coordinate of each point is within the range of  $[0..30,000]$ . It is also guaranteed that no two points has the same coordinate.

## Input

- The first line of input contain the number of points **N** ( $1 \leq N \leq 50,000$ )
- The following **N** lines, each contains two integers **X** and **Y**, gives the coordinate of each points.

## Output

Output exactly one line containing the minimum distance pairs of these points.

## Example

Input	Output
2 1 1 2 2 5 1	2
6 10 2 10 4 10 6 12 3 12 5 12 7	4