CCCHK '15 J2 - What is the minimum area?

Time limit: 1.0s **Memory limit:** 256M

There are N points in a 2D plane. You can place any square on the plane as long as the square is rectilinearly oriented, i.e., its sides are paralleled to the x and y axis. What is the minimum area of a square that can cover at least two points in the plane?

Input Specification

- The first line contains one integer N $(2 \leq N \leq 100)$ representing the number of points in the plane.
- The next N lines are the x and y coordinates of the points. The x and y coordinate values are separated by a space. It is guaranteed that x and y are integers and in the range of $[-10\,000, 10\,000]$.
- You can assume that the points are unique.

Output Specification

An integer represents the minimum area of a square that can cover at least two points in the plane.

Sample Input 1

```
3
0 0
2 1
-2 -4
```

Sample Output 1

```
4
```

Explanation for Sample Output 1

A possible square is with the lower left corner and upper right corner locating at $(0, 0)$ and $(2, 2)$, which can cover points $(0, 0)$ and $(2, 1)$. The area of this square is 4.

Sample Input 2

```
3
0 0
2 2
3 3
```

Sample Output 2

```
1
```

Explanation for Sample Output 2

A possible square is with the lower left corner and upper right corner locating at $(2, 2)$ and $(3, 3)$, which can cover points $(2, 2)$ and $(3, 3)$. The area of this square is 1.