Art Class II

Time and Memory Limits: 1 second, 1 GB

You and your classmates were being a little too rowdy during art class this morning and have made a bit of a mess.

There's a large, usually blank wall at the back of the classroom. Unfortunately, the class (mostly you, honestly) have made N holes in the wall. The ith hole is located x_i centimetres from the left edge of the wall, and y_i centimetres from the bottom edge of the wall.

You and your class have decided to create a single large poster to put on the wall to cover the holes.

To be as inconspicuous as possible, your poster should be:

- rectangular in shape

- hung so its sides are parallel to the edges of the wall

- large enough to cover all of the holes.

Note that a hole on the very edge of the poster will still be hidden (seems like your teacher forgot their glasses today).

You don't have a lot of time before the teacher returns, so you've decided to write a program that will tell you the area of the smallest poster that will cover all the holes.

Input

- The first line of input contains the single integer N.

- The next N lines describe the location of the holes. The ith line contains the two integers x_i and y_i.

Output

Your program should output a single integer, the area (in square centimetres) of the smallest poster that will cover all the holes.

Sample Input 1	Sample Input 2	Sample Input 3
5	4	2
2 3	4 4	2 1
3 1	3 3	3 1
4 2	5 5	
4 4	1 1	
6 1		

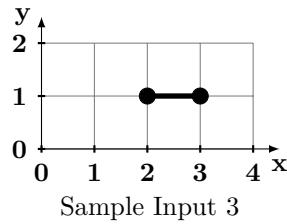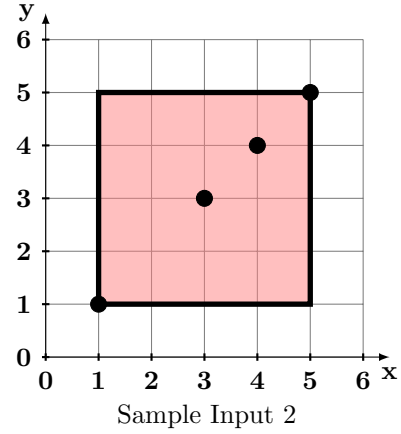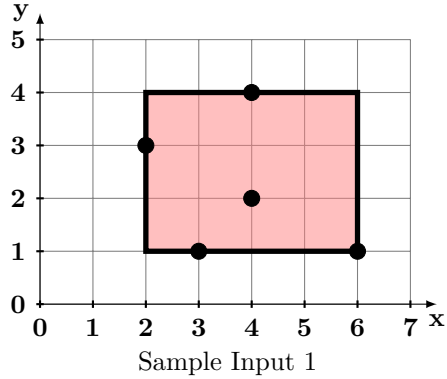| Sample Output 1	Sample Output 2	Sample Output 3
12	16	0

Explanation

Each of the sample cases are illustrated below. Note that in the third sample input, the holes can be covered by an infinitely thin poster with a height of zero. The area of this poster is zero.

Sample Input 1

Sample Input 2

Sample Input 3

Subtasks & Constraints

For all test cases:

- $2 \leq N \leq 100\,000$.

- $1 \leq x_i \leq 10\,000$, for all i.

- $1 \leq y_i \leq 10\,000$, for all i.

Additionally:

- For Subtask 1 (40 points), $N = 2$.

- For Subtask 2 (40 points), $x_i = y_i$, for all i. See Sample Input 2 for an example.

- For Subtask 3 (20 points), no special constraints apply.