Forced Sales (bankrupt)

These are hard times for the OIS... sponsors are getting scarcer every day and the balance sheet is in a huge deficit. In order to avoid bankruptcy, Edoardo is thus forced to renounce to the mega-mansion the OIS just bought for ensuring his best possible focus while preparing the tasks.

Figure 1: Panorama of the upper side of the south-east minor wing of Edoardo's mansion.

The perimeter of Edoardo's mansion is a polygon with N sides of integer length, all of them either horizontal or vertical. From the cadastral map, he knows the exact position (X_i, Y_i) of each vertex P_i of the polygon. Help Edoardo compute the area of his mansion, in order to set an adequate price for it!

☞ Among the attachments of this task you may find a template file `bankrupt.*` with a sample incomplete implementation.

Input

The first line contains the only integer N. The following N lines contain two integers X_i, Y_i each.

Output

You need to write a single line with an integer: the area of the mansion.

✍ The area may not fit into a 32-bit integer: use `long long` in C/C++ and `int64` in Pascal in order to avoid integer overflow.

Constraints

- $4 \leq N \leq 1\,000\,000$.
- $0 \leq X_i, Y_i \leq 10^9$ for each $i = 0 \ldots N-1$.
- The vertices are listed in **clockwise** order, and are all **distinct**.
- The sides of the polygon are either **horizontal** or **vertical**, alternating between the two.
- The polygon does not **intersect** itself.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) $N = 4$.

– **Subtask 3** (25 points) $N \leq 50$ and $X_i, Y_i \leq 100$ for all $i = 0 \ldots N-1$.

– **Subtask 4** (30 points) $X_i, Y_i \leq 1000$ for all $i = 0 \ldots N-1$.

– **Subtask 5** (20 points) $X_i, Y_i \leq 1\,000\,000$ for all $i = 0 \ldots N-1$.

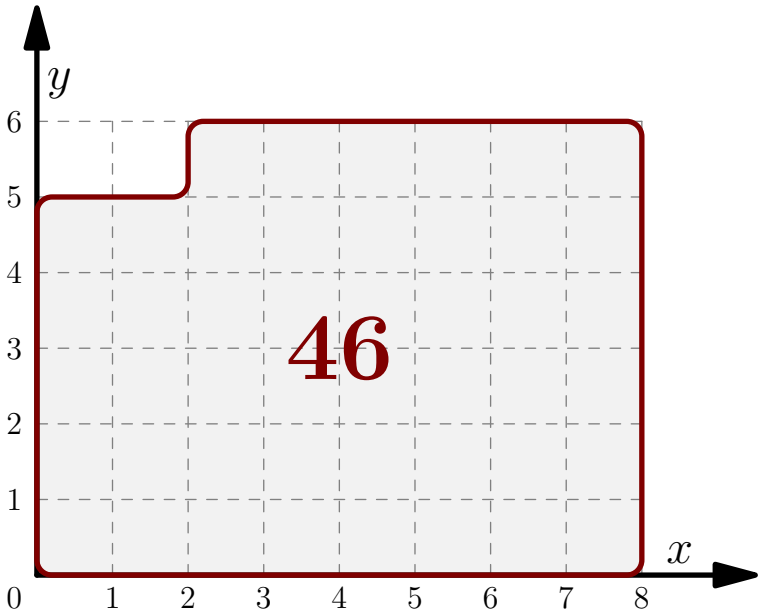
– **Subtask 6** (15 points) No additional limitations.

Examples

input	output
6 0 0 0 5 2 5 2 6 8 6 8 0	46
14 6 6 3 6 3 5 4 5 4 2 1 2 1 9 7 9 7 3 10 3 10 7 11 7 11 1 6 1	46

Explanation

In the **first sample case**, the mansion has the following shape.



In the **second sample case**, the mansion has the following shape.