

E. Points

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given N points on a plane. Write a program which will find the sum of squares of distances between all pairs of points.

Input

The first line of input contains one integer number N ($1 \leq N \leq 100\,000$) — the number of points. Each of the following N lines contain two integer numbers X and Y ($-10\,000 \leq X, Y \leq 10\,000$) — the coordinates of points. Two or more points may coincide.

Output

The only line of output should contain the required sum of squares of distances between all pairs of points.

Examples

input	Copy
<pre>4 1 1 -1 -1 1 -1 -1 1</pre>	
output	
<pre>32</pre>	

→ Attention

Package for this problem was not updated by the problem writer or Codeforces administration after we've upgraded the judging servers. To adjust the time limit constraint, solution execution time will be multiplied by 2. For example, if your solution works for 400 ms on judging servers, then value 800 ms will be displayed and used to determine the verdict.

All-Ukrainian School Olympiad in Informatics

Finished

→ Virtual participation

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