Problem D. Not Long Enough

Input file:	standard input
Output file:	standard output
Time limit:	1.5 seconds
Memory limit:	256 megabytes

Alice has n 2-dimensional vectors but Bob thinks that these vectors are not long enough.

Alice wants to find a subset of these vectors such that their sum is as long as possible.

Input

First line contains a single integer n. Next n lines contain 2 integers each, x_i and y_i, coordinates of the i-th vector.

$1 \leq n \leq 2 \cdot 10^5$,

$-10^4 \leq x_i, y_i \leq 10^4$.

Output

Print one integer — squared length of the longest possible vector that can be created.

Example

standard input	standard output
4 1 0 0 1 1 1 -1 -1	8

Note

In the sample, the sum of the first 3 vectors is (2, 2), resulting in the squared length of 8.