

E. The Child and Polygon

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

This time our child has a simple polygon. He has to find the number of ways to split the polygon into non-degenerate triangles, each way must satisfy the following requirements:

- each vertex of each triangle is one of the polygon vertex;
- each side of the polygon must be the side of exactly one triangle;
- the area of intersection of every two triangles equals to zero, and the sum of all areas of triangles equals to the area of the polygon;
- each triangle must be completely inside the polygon;
- **each side of each triangle must contain exactly two vertices of the polygon.**

The picture below depicts an example of a correct splitting.

Please, help the child. Calculate the described number of ways modulo $1000000007 (10^9 + 7)$ for him.

Input

The first line contains one integer $n (3 \leq n \leq 200)$ — the number of vertices of the polygon. Then follow n lines, each line containing two integers. The i -th line contains $x_i, y_i (|x_i|, |y_i| \leq 10^7)$ — the i -th vertex of the polygon in clockwise or counterclockwise order.

It's guaranteed that the polygon is simple.

Output

Output the number of ways modulo $1000000007 (10^9 + 7)$.

Examples

input
4 0 0 0 1 1 1 1 0
output
2

input
4 0 0 1 0 0 1 -1 0
output
1

input
5 0 0 1 0 1 1

0 1 -2 -1
output
3

Note

In the first sample, there are two possible splittings:

In the second sample, there are only one possible splitting: