
Problem A. Intersection Of Tangents

Input file: **standard input**
Output file: **standard output**
Time limit: **2 seconds**
Memory limit: **512 megabytes**

In this problem polygons are assumed to have no self-touchings or self-intersections.

A **tangent** to a polygon is a straight **line** that contains at least one point on the boundary of the polygon, and none of its interior points.

You are given a polygon with integer vertex coordinates. The polygon is not necessarily convex. Find a point with integer coordinates such that there exist two tangents to this polygon which both pass through this point and intersect at 90° . It is guaranteed that at least one solution exists. If there are multiple solutions, output any of them.

Input

The first line of input contains a single integer n ($3 \leq n \leq 1000$) — the number of vertices in the polygon. n lines follow describing the vertices of the polygon. i -th of them contains two integers x_i and y_i ($-10^8 \leq x_i, y_i \leq 10^8$) — the coordinates of i -th vertex. The vertices are given in counter-clockwise order.

The polygon has no self-touchings or self-intersections. There are no three consecutive points which lie on the same line.

It is guaranteed that an answer exists.

Output

Output two integers x and y ($-10^9 \leq x, y \leq 10^9$) — the coordinates of the point you found.

Examples

standard input	standard output
3 1 2 3 1 3 3	1 2
4 0 0 7 1 2 1 3 2	1 3

Note

Images for samples and some random photo.

