Problem B. Craters

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

Craters on the moon can be represented as N randomly chosen integer points on the plane.

You control the rover; the rover is going to place three sensors in some craters.

To do it effectively, you must find out the triangle with the vertices in crater points and maximum possible area.

Input

First line of the input contains one integer N — number of points ($3 \le N \le 2 \times 10^5$).

Each of next N lines contain two integers — coordinates of the next point x_i and y_i.

It is guaranteed that each of numbers x_i and y_i was chosen equiprobably from $2N + 1$ integers between $-N$ and N.

Output

Print three lines, each line must contain coordinates of the next vertice of the triangle. If there are multiple solutions, print any of them.

Example

standard input	standard output
5 1 5 -2 5 -1 2 4 -3 5 3	4 -3 5 3 -2 5