

F. Polygonal Chain (round 1)

Input: standard input (from the keyboard)

Output: standard output (to the screen)

Time limit: 1 second

Memory limit: 256 Mb

Problem

You're given a set of points on a plane. Construct a closed polygonal chain that has no self-intersections and no vertices apart from points in a set, if any exists.

Input

The number of points n is specified in the first line of the input, $3 \leq n \leq 2011$. Next n lines list a set of points: each line contains abscissa and ordinate of a corresponding point respectively. There are no recurring points. Each coordinate is an integer with absolute value not exceeding 10000.

Output

If that's impossible to construct required polygonal chain, output 0. Otherwise output the order of points on a polygonal chain, starting at any point going either clockwise or counterclockwise. Point numbering starts with 1. There can be several possible polygonal chains, it's sufficient to find any one of them.

Example

| Input | Output |
|---|---------------|
| 7 1 0 -1 -1 1 1 -1 1 0 0 1 -1 0 -1 | 2 4 3 1 6 5 7 |