
Never trust Ivan (2)**P46204_en**

Given n points on the plane $p_1 \dots p_n$ no three of which are collinear, find a permutation of the points $p_{i_1} \dots p_{i_n}$ such that the n segments $(p_{i_1}, p_{i_2}), (p_{i_2}, p_{i_3}), \dots, (p_{i_{n-1}}, p_{i_n}), (p_{i_n}, p_{i_1})$ form a non-degenerate polygon, that is, one that does not cross itself.

Input

Input consists of several cases, each one with n followed by n points with integer coordinates not larger than 10^7 in absolute value. Assume $3 \leq n \leq 10^4$, and that no three given points are collinear.

Output

For every case, print a correct polygon constructed from the n points. If there is more than one solution, print any of them. If there is no solution, print "Ivan is a troll".

Sample input 1

```
4  0  0   1  1   0  1   1  0
3  0  0   10 10  15 20
5  -1 -1  -3 -3  -1 1   1 -2  -2 0
4  0  0  -1 1   0 -1   1 -2
7  -9 -4   0 -5   2 3   1 7   0 0   5 -5   1 4
```

Sample output 1

```
1  4  2  3
1  2  3
2  4  1  3  5
3  4  1  2
1  2  6  5  3  7  4
```

Problem information

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