Problem F
Fair Play



Together with your coworker, Larry, you are organizing the exciting Billiards and Pool Competition for your coworkers in your small company. You and Larry are usually on the same page, and surely he will approve of your latest idea. You even bought a nice prize for your coworkers to win and you hope that they are as excited as you are. You want to maximise fun.

It would thus be nice to try to avoid complete walkovers: that is no fun for either player. After some thought, you think it is good to suggest to Larry to divide the players into groups of two. That way, you can compensate for a player's strength by pairing them with a weaker player. In fact, it would be perfect if every team had the exact same strength! Before you tell Larry your plans, you decide to first figure out whether this is possible.

According to your model, synergy plays a negligible role in determining team strength, and the strength of a team is simply determined by the strength of its individual members. Every coworker has a certain skill level in both billiards and pool, as indicated by two integers. When two coworkers are teamed up, their total skill is the sum of their individual skills. Can you divide everyone into teams of two such that every team has the exact same skill in both pool and billiards?

Input

The input consists of:

- A line with an integer n ($2 \leq n \leq 10^5$), the number of coworkers you have.
- Then follow n lines containing two integers b and p ($-10^6 \leq b, p \leq 10^6$), the skill in billiards and pool, respectively, of each coworker.

Output

Output "`possible`" if it is possible to divide all coworkers into teams of two with equal skill. Output "`impossible`" otherwise.

Sample Input 1

```
6
2 1
3 0
3 0
4 2
4 2
5 1
```

Sample Output 1

```
possible
```

Sample Input 2

```
4
1 0
0 1
-2 0
0 -2
```

Sample Output 2

```
impossible
```

Problem G
Getting Square

You have come into possession of an irregularly-shaped piece of a stained-glass mosaic. Although the overall piece is damaged from years of storage, and missing many parts around the border, you think it would be quite nice to keep a small part of this delightful object as a souvenir.

You will find a perfectly-square subregion of this mosaic and prise it out—but only by removing pieces along the existing lines between glass panes, never by cutting into the glass.

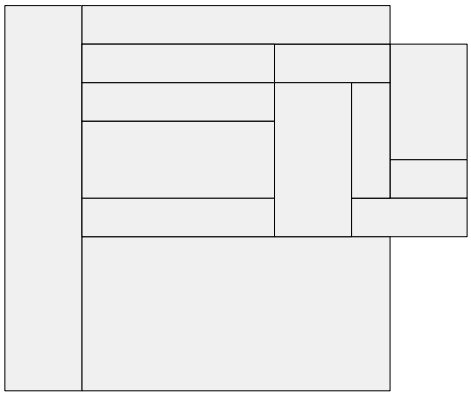


Figure G.1: A visualisation of the first sample input. You can take a 5×5cm piece out from the upper-right corner.

Glass is cumbersome and you'd rather not take more than necessary. What's the smallest square you can take out as one piece without damaging the glass?

Input

The input consists of:

- One line containing the integer n ($1 \leq n \leq 1'000'000$), the number of pieces of glass.
- n further lines, each containing the integers $x_0 y_0 x_1 y_1$ ($0 \leq x, y \leq 1'000'000$), the coordinates in centimetres of the lower-left and upper-right corner of one piece per line.

It is guaranteed that none of the given pieces of glass intersect.

Output

Output the area of the smallest square that you can remove along existing lines, in centimetres squared. If it is not possible to remove any square at all, output `impossible` instead.

Sample Input 1

```
13
20 16 22 19
20 15 22 16
19 14 22 15
10 10 12 20
12 10 20 14
12 14 17 15
19 15 20 18
17 18 20 19
12 19 20 20
12 15 17 17
12 17 17 18
12 18 17 19
17 14 19 18
```

Sample Output 1

```
25
```

Sample Input 2

```
4
0 0 1 9
1 0 9 1
1 8 9 9
8 1 9 8
```

Sample Output 2

```
impossible
```