Problem M: Mirror Magic

Time limit: 2 seconds

Mia and Mark both own a chandelier, each of which has n candleholders. After the installation, Mia wonders whether she can hide a part of the room behind a vertically placed mirror for a magic trick. Of course, the mirror should be placed such that Mark would not notice its existence. She believes that she can ensure that Mark will not be able to see her or himself in the mirror, and that she can use clever lighting to hide any possible weirdness resulting from mirroring the room's walls. What worries her most are the chandeliers. Mark knows the precise positions of all the candleholders and would immediately notice if the chandelier in the mirror looked different from the chandelier behind the mirror he expects to see. Naturally, all candleholders of one chandelier should lie on one side of the mirror, and all candleholders of the other chandelier on the other side.

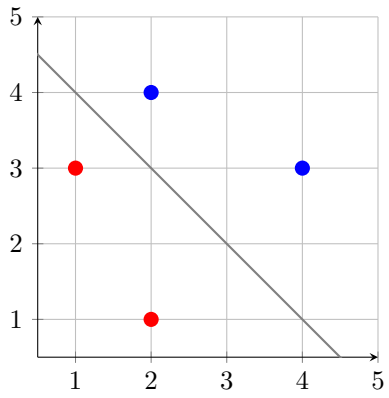


Figure M.1: Illustration of the third sample.

Input

The input consists of:

- One line with an integer n ($1 \leq n \leq 10^5$), the number of candleholders in each chandelier.
- n lines, each containing two integers x_i and y_i ($-10^6 \leq x_i, y_i \leq 10^6$), the coordinates of the ith candleholder of Mia's chandelier.
- n lines, each containing two integers x_i and y_i ($-10^6 \leq x_i, y_i \leq 10^6$), the coordinates of the ith candleholder of Mark's chandelier.

It is guaranteed that all $2 \cdot n$ points are pairwise distinct.

Output

Output "`possible`" if it is possible to place the mirror as desired, and "`impossible`" otherwise.

Sample Input 1	Sample Output 1
1 0 0 1 1	possible

Sample Input 2

```
2
0 0
2 2
1 1
3 3
```

Sample Output 2

```
impossible
```

Sample Input 3

```
2
1 3
2 1
2 4
4 3
```

Sample Output 3

```
possible
```

Sample Input 4

```
2
2 1
1 3
2 4
4 3
```

Sample Output 4

```
possible
```

Sample Input 5

```
3
1 1
3 1
2 4
1 3
3 3
2 0
```

Sample Output 5

```
impossible
```

Sample Input 6

```
3
-1 -1
-2 -2
-2 1
0 0
1 -1
1 2
```

Sample Output 6

```
impossible
```

Sample Input 7

```
3
-1 -1
-2 -2
-2 1
0 1
1 -1
1 2
```

Sample Output 7

```
impossible
```