British Informatics Olympiad Final

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Strangers

Alpha complex has suffered rather too many security breaches over the last few years. One of the reasons spies have been able to move around so freely is because too few people in the complex know each other, allowing the spies to blend in. To try and remedy this a group hug is being arranged.

Everybody is going to stand in a large circle and then hug the people immediately to their left and right. The objective is for everyone to hug two strangers. This is certain to prevent future security problems.

The first line of the input will consist of a single integer n ($3 \leq n \leq 250$) indicating the number of people attending the group hug. This will be followed by a sequence of lines, each containing two numbers a_i and b_i ($1 \leq a_i < b_i \leq 250$), indicating that person a_i and person b_i *already know each other*. Due to the nature of Alpha complex, *everybody will be a stranger to more than half of the other people*. The input will be terminated by the line `-1 -1`.

Your output should consist of n lines. The i^{th} of these lines should contain a single integer indicating who is standing at position i in the circle, so that everybody is adjacent to two strangers. [Note: With the given conditions, there is always a solution.]

Sample Input

```
6
2 3
1 2
3 4
1 5
4 6
5 6
-1 -1
```

Sample Output

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