

Problem B

Paintball

Problem ID: paintball

Marek and his schoolmates have just finished their studies at the university. They wanted to celebrate it with a game of paintball. After an hour of playing a very strange thing happened – everyone had exactly one bullet left. Marek, being a very curious person, wanted to know whether it's possible that everyone will be hit exactly once provided nobody moves.

Task

You are given a description of the situation during a paintball game when every player has only one bullet. The description of the game consists of pairs of players who can see each other. If a player can see another player, he can fire at him. Your task is to find a target for each player such that everyone will be hit.

Input

The first line of input contains two space separated integers N and M , satisfying $2 \leq N \leq 1\,000$ and $0 \leq M \leq 5\,000$, where N is the number of players. Players are numbered $1, 2, \dots, N$. M lines follow, each line containing two space separated integers A and B ($1 \leq A < B \leq N$), denoting that players A and B can see each other. Each pair of players appears at most once in the input.

Output

If there is no assignment of targets such that everyone will be hit, output `Impossible`. Otherwise output N lines. The i -th line should contain the number of the target of the i -th player. If there is more than one solution, output any one.

Sample input 1

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

Sample output 1

```
2
3
1
```

Sample input 2

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

Sample output 2

```
Impossible
```