

Problem Mar 3: Carnival

Time limit: 3 seconds

It is Carnival again, and as every year, you are celebrating with your friends and their friends. After watching the parade in the morning, you are planning to spend the rest of the day at the *Rosenmontagsparty*. When you arrive, you realize that there are not enough tickets for the whole group available any more. Luckily, there is the *Best Carnival Party* nearby. A quick phone call later, your group decides to split, as neither venue has enough room left for all of you.



Photo by Ben_Kerckx

Everyone would like to party with all of their friends, but you soon realize that this is impossible to achieve. After some discussion, you agree that separating the group such that everyone has at most one friend celebrating at the other party is acceptable.

Since you are the least drunk of all your friends, you are given the task of deciding who will go to which party.

Input

The input consists of:

- One line with two integers n and m ($2 \leq n \cdot m \leq 2 \cdot 10^6$), the number of people in your group and the number of friendships.
- m lines each containing two integers a and b ($1 \leq a, b \leq n$), indicating that a and b are friends.

It is guaranteed that everyone is either your friend or a friend of one of your friends.

Output

If there is no valid partition, output “impossible”. Otherwise, output “possible”, followed by either r or b for each person, indicating the party where they are going.

Sample Input 1

```
6 8
1 2
1 3
1 4
2 3
2 6
3 4
4 5
5 6
```

Sample Output 1

```
possible
rrrrbb
```

Sample Input 2

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

Sample Output 2

```
possible
brrrrrr
```

Sample Input 3

```
6 8
1 2
1 3
2 3
2 6
3 4
3 5
4 5
5 6
```

Sample Output 3

```
impossible
```