

## (Adv.) Competitive Programming

Submit until end of contest, via the [judge interface](#)



**Problem: oneway** (1 second timelimit)

Your lifelong nemesis, Rita Rival, invested in a local delivery company. Shortly after, you inherited a large amount of one-way signs from a mysterious great aunt Betty. What a coincidence! Now it's time to bring down Mrs. Rival for good. You plan on placing your signs on the streets between crossroads, such that there is no path of length two or more. Furthermore, you want to make sure that Ritas logistics center has no outgoing roads whatsoever. The IT-guys at Hasso Plattner Institute will find the perfect sign placement or tell you that it is impossible.

**Input** The first line contains the number of crossroads  $n \leq 1e5$  and bidirectional roads  $m \leq 1e8$ . The next  $m$  lines each contain a road, given by two endpoints  $0 < a, b \leq n$ . Ritas logistics center has id 1. The network is guaranteed to be connected.

**Output** If the operation is impossible, print "impossible!". Otherwise, for each road print a line with 1 if the road should be from  $a$  to  $b$  or 0 if the road should be from  $b$  to  $a$ . Note that  $a$  and  $b$  refer to the order in which the endpoints were given in the input. Likewise we expect the order of edges in the output to match the input order.

### Sample input

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

### Sample output

```
impossible!
```

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

```
0
0
1
1
```