

## 4839 Traffic Real Time Query System

City  $C$  is really a nightmare of all drivers for its traffic jams. To solve the traffic problem, the mayor plans to build a RTQS (Real Time Query System) to monitor all traffic situations. City  $C$  is made up of  $N$  crossings and  $M$  roads, and each road connects two crossings. All roads are bidirectional. One of the important tasks of RTQS is to answer some queries about route-choice problem. Specifically, the task is to find the crossings which a driver MUST pass when he is driving from one given road to another given road.

### Input

There are multiple test cases.

For each test case:

The first line contains two integers  $N$  and  $M$ , representing the number of the crossings and roads.

The next  $M$  lines describe the roads. In those  $M$  lines, the  $i$ -th line ( $i$  starts from 1) contains two integers  $X_i$  and  $Y_i$ , representing that road $_i$  connects crossing  $X_i$  and  $Y_i$  ( $X_i \neq Y_i$ ).

The following line contains a single integer  $Q$ , representing the number of RTQs.

Then  $Q$  lines follows, each describing a RTQ by two integers  $S$  and  $T$  ( $S \neq T$ ) meaning that a driver is now driving on the road $_s$  and he wants to reach road $_t$ . It will be always at least one way from road $_s$  to road $_t$ .

The input ends with a line of '0 0'.

Please note that:  $0 < N \leq 10000$ ,  $0 < M \leq 100000$ ,  $0 < Q \leq 10000$ ,  $0 < X_i, Y_i \leq N$ ,  $0 < S, T \leq M$

### Output

For each RTQ prints a line containing a single integer representing the number of crossings which the driver MUST pass.

### Sample Input

```
5 6
1 2
1 3
2 3
3 4
4 5
3 5
2
2 3
2 4
0 0
```

### Sample Output

```
0
1
```