4839 - Traffic Real Time Query System

Asia - Hangzhou - 2010/2011

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
```

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