Prof. Dr. Friedrich, Dr. Lenzner, Boockmeyer, Neumann, Stangl
Sommersemester 2017

Woche 04 – (Adv.) Competitive Programming

Abgabe 15.05.2017 17:00 Uhr, über das Judge-Interface

Aufgabe 1 (exploration). (100 Points – 1 second timelimit)

One of HPI Bachelorprojects wants to get to know their project parter – Deutsche Bahn – better. To that end they decided to visit all train stations currently maintained by Deutsche Bahn. As their future project partner Deutsche Bahn has decided to help them: The students are given a list of trains which go directly from one specific station to another. The train will go from the start to the end station exactly once, although the students may decide when it should make the journey. Your task is to find one possible order in which the train stations may be visited given the following constraints:

 (a) Each stations must be visited by at least one student (You may assume that as many students as you require will participate in the exploration).

 (b) To minimize travel costs you must keep the number of trains stations where students start and end their journey as low as possible.

 (c) Deutsche Bahn has taken into account that you don't want to visit any station twice, so once a student has left a station they won't be able to go back to the station.

Out of curiosity the Bachelorproject wants to see how Deutsche Bahn measures up to other train companies, thus you will have to plan multiple such explorations.

Input   The first line contains n ($0 \leq n \leq 600$), the number of train companies / explorations / test cases. Then, for each test case, there will be one line containing k and p ($0 \leq k \leq 300$) separated by a space, where k is the number of stations that need to be visited, followed by p lines, each containing the ids of two stations a and b ($0 \leq a, b < k$) which are connected by a train from a to b.

Output   For each test case, print one possible order in which the train stations could be visited, by printing one trains station id per line.

Points   There are three groups of test sets:

- *easy:* For the first group worth 25 Points, you can assume, that $n \leq 200$ and $k \leq 75$.

- *medium:* For the second group worth 35 Points, you can assume, that $n \leq 300$ and $k \leq 150$.

- *hard:* For the third group of test sets worth 40 Points, there are no additional assumptions.

Sample Input

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

Sample Output

```
0
1
2
3
4
```

Or

```
1
0
2
3
4
```

Or multiple others.