

Problem – Network Administration

The management of the company AXO Production Inc owns a building with a network infrastructure already developed and wants to move some departments there without modifying the existing placement of routers. You have to find out how routers can be grouped respecting department rules stated below, each group representing a department at the end.

Rules:

There must be as many routers as possible in a department .

Redundancy: in the extreme case in which one of them crashes, the communication for that department would still be possible. A group with two routers is considered to be redundant.

One router can belong to more than one department.

Communication between two routers is possible if the routers are directly connected through a wire (may or may not have other routers connecting them).

****Input data***

The input file network.in is structured as follows:

-on the first line N and M separated by a blank space, representing the number of routers and wires respectively.

-the next M lines will each contain 2 numbers separated by a blank space, representing two routers connected through a wire.

****Output data***

The output file network.out should contain a number of lines equal to the number of groups found, each with the numbers of the routers in the group separated by a blank space.

****Restrictions***

$1 < N \leq 10000$

$1 < M \leq 10000$

****Example***

network.in	network.out
10 13	1 2 3 4
1 2	3 5
1 3	4 8
2 3	5 6 7
2 4	8 9 10
3 4	
3 5	
4 8	
5 6	
5 7	
6 7	
8 9	
8 10	
9 10	
9 12	1 2 3
1 2	3 4
1 3	4 5 6

2 3
3 4
5 4
5 6
4 6
6 9
6 7
8 9
6 8
7 8

6 7 8 9

The solutions should have a Readme file that should contain:

1. a short description of the algorithms you used,
2. the complexity of the algorithms (you must compute it).

Send the solutions in a .zip archive with the name HW_<number>_<name>_<group>.zip (e.g. HW_1_PopescuAndrei_1231E.zip) by email to: andavintila@gmail.com.

The deadline for receiving the homework is 16th of January, at 23:59.

Rules for assignments: <http://adcfils.wordpress.com/assignments/>