Hasso Plattner Institut
IT Systems Engineering | Universität Potsdam

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

Woche 03 – (Adv.) Competitive Programming

Abgabe 08.05.2017 17:00 Uhr, über das Judge-Interface

Aufgabe 1 (bankcrisis)**.** (100 Points - 2 seconds timelimit)

The city Citopia is really famous for her huge number of banks. Since the banks are the main employers of Citopia, the city has a big interest that there is no bank crisis. The banks in Citopia are all connected to each other. It is usual that two banks guarantee for each other. That means, if a bank collapses because of a bank crisis, all other banks who guarantee for that bank will collapse as well.

Because of this huge risk, the mayor of the city needs a *map* of the relations of all banks in Citopia to see how many banks will also collapse, when a single bank collapses.

Input The input will begin with m ($1 \leq m \leq 900000$), the number of relations. Each relation consists of two integers a and b. That means, a guarantees for b and b guarantees for a.

Note: Each bank is identified by an unique id. But since some banks are already collapsed, the ids are not continuous.

Output Please print one line per set of related banks. Please separate the related bank with a comma and a space (see example below).

Also please sort them. Each set should be sorted ascending. Also please sort all sets ascending by the first element.

Points There are three groups of test sets:

- *e(asy)*: For the second group worth 30 Points, you can assume, that $m \leq 40000$.
- *h(ard)*: For the third group of test sets worth 70 Points, there are no additional assumtions.

Sample Input

```
6
6 4
4 5
5 6
10 12
6 8
10 2
```

Sample Output

```
2, 10, 12
4, 5, 6, 8
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