There are 1 questions for a total of 100 points.

(100) 1. In this programming assignment, we will develop an algorithm for solving the following simple graph theoretic problem:

Design an algorithm to check if the given directed graph is *at-least-one-way connected*. A directed graph $G = (V, E)$ is said to be *at-least-one-way connected* iff for all pair (u, v) of vertices, at least one of the following holds:

- there is a path from u to v,
- there is a path from v to u.

Your program should take input from a file named `input.txt` and should write the output on the standard output. Your program should produce an output within 5 seconds for this assignment. The format for input and output files are as follows.

INPUT: The first line of the input file gives the number of vertices $|V|$ in the graph $G = (V, E)$. You may assume that $|V| \le 10000$ and $|E| \le 1000000$ for this assignment. This is followed by n lines where the ith line gives the neighbours of the ith vertex (*comma separated without any spaces*). If the ith vertex does not have any neighbors, then the line contains a dash. Below is an example of an input file corresponding to the directed graph given in Figure 1.
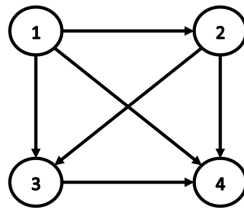
```
4
2,4,3
4,3
4
-
```


Figure 1: An example directed graph that is at-least-one-way-connected.

OUTPUT: The output should be 1 if the given input graph is at-least-one-way-connected and 0 otherwise.

Evaluation: Evaluation of this homework will be completely automated. There will be no labs held for evaluation of this assignment. Labs may be held before the deadline for helping you in case you are facing any problems in programming. So, please make sure you follow the instructions:

- There will be serious consequences if you try to copy code or cheat in any manner in this assignment.
- Any code submitted after the deadline will not be evaluated.
- Please follow input/output instructions carefully since your code will be checked using scripts. Please name the java file containing the main method as `alow.java`.