Problem 3 – Graph Cycles

You'll be given a **directed graph**; your task is to **find all cycles of length 3** and **print them in lexicographical order**.

The graph's vertices will be **natural numbers**. Cycles are considered different if the direction of movement is different, even if they contain the same 3 vertices. For example, the cycle 0 -> 1 -> 2 is the same as 1 -> 2 -> 0 and 2 -> 0 -> 1, but is different from 2 -> 1 -> 0.

There may be multiple edges connecting the same two vertices in the same direction, take into consideration only one of them – e.g. if there are two edges connecting 0 -> 1, there is only one cycle 0 -> 1 -> 2 because the two edges between 0 and 1 are considered identical. Check out the examples to understand the task better.

Input

- The input data should be read from the console.
- On the first input line you'll be given the **number of vertices N**.
- On the next N lines, you'll be given the edges in format **`{source} -> {child1} {child2} … {childN}`**.
- The input data will always be valid and in the format described. There is no need to check it explicitly.

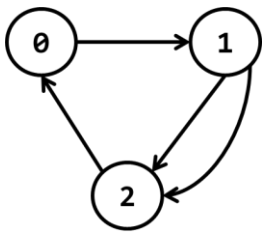
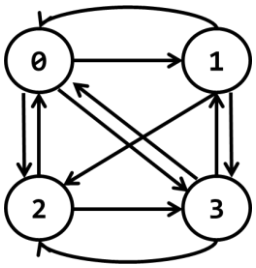
Output

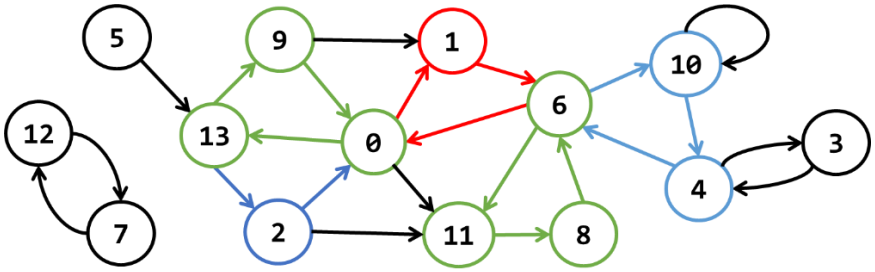
- The output should be printed on the console.
- On each line, print a cycle of length 3. Cycles should be printed in format **`{{vertex1} -> {vertex2} -> {vertex3}}`** in **lexicographical order**.

Constraints

- The graph will contain between 1 and 50 vertices.
- Vertices will be natural numbers in the range [0 … N].
- Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

Examples

Input	Output	Comments
3 1 -> 2 2 0 -> 1 2 -> 0	{0 -> 1 -> 2}	One cycle (ignore the second edge connecting 1 -> 2): 
4 0 -> 2 3 1 1 -> 3 0 2 -> 0 3 3 -> 2 0 1	{0 -> 1 -> 3} {0 -> 2 -> 3} {0 -> 3 -> 1} {0 -> 3 -> 2}	The cycle 0 -> 1 -> 3 is different from 0 -> 3 -> 1 (different direction). Same applies for 0 -> 2 -> 3 and 0 -> 3 -> 2: 

14 12 -> 7 7 -> 12 5 -> 13 13 -> 9 2 9 -> 1 0 2 -> 0 11 0 -> 13 1 11 1 -> 6 11 -> 8 6 -> 0 11 10 8 -> 6 10 -> 10 4 4 -> 6 3 3 -> 4	{0 -> 1 -> 6} {0 -> 13 -> 2} {0 -> 13 -> 9} {4 -> 6 -> 10} {6 -> 11 -> 8}	
4 0 -> 1 1 -> 2 2 -> 3 2 1 3 ->	No cycles found