

## 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  $0 \rightarrow 1 \rightarrow 2$  is the same as  $1 \rightarrow 2 \rightarrow 0$  and  $2 \rightarrow 0 \rightarrow 1$ , but is different from  $2 \rightarrow 1 \rightarrow 0$ .

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  $0 \rightarrow 1$ , there is only one cycle  $0 \rightarrow 1 \rightarrow 2$  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.

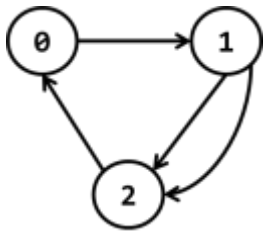
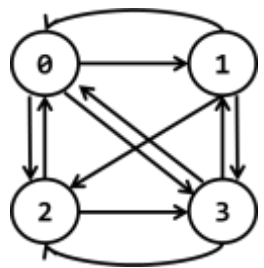
### Output

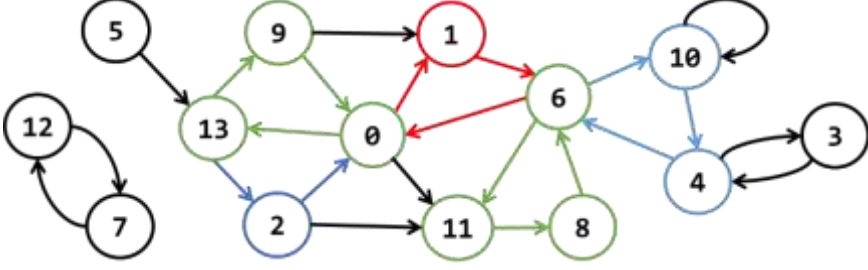
- The output should be printed on the console.
- On each line, print a cycle of length 3. Cycles should be printed in format **{{vertex1} -> {vertex2} -> {vertex3}}** in **lexicographical order**.

### Constraints

- The graph will contain between 1 and 50 vertices.
- Vertices will be natural numbers in the range  $[0 \dots N]$ .
- 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 $1 \rightarrow 2$ ): 
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 $0 \rightarrow 1 \rightarrow 3$ is different from $0 \rightarrow 3 \rightarrow 1$ (different direction). Same applies for $0 \rightarrow 2 \rightarrow 3$ and $0 \rightarrow 3 \rightarrow 2$ : 

<pre> 14 12 -&gt; 7 7 -&gt; 12 5 -&gt; 13 13 -&gt; 9 2 9 -&gt; 1 0 2 -&gt; 0 11 0 -&gt; 13 1 11 1 -&gt; 6 11 -&gt; 8 6 -&gt; 0 11 10 8 -&gt; 6 10 -&gt; 10 4 4 -&gt; 6 3 3 -&gt; 4 </pre>	<pre> {0 -&gt; 1 -&gt; 6} {0 -&gt; 13 -&gt; 2} {0 -&gt; 13 -&gt; 9} {4 -&gt; 6 -&gt; 10} {6 -&gt; 11 -&gt; 8} </pre>	
<pre> 4 0 -&gt; 1 1 -&gt; 2 2 -&gt; 3 2 1 3 -&gt; </pre>	No cycles found	