The Bottom of a Graph

We will use the following (standard) definitions from graph theory. Let V be a nonempty and finite set, its elements being called vertices (or nodes). Let E be a subset of the Cartesian product $V \times V$, its elements being called edges. Then $G = (V, E)$ is called a directed graph.

Let n be a positive integer, and let $p = (e_1, \ldots, e_n)$ be a sequence of length n of edges $e_i \in E$ such that $e_i = (v_i, v_{i+1})$ for a sequence of vertices $(v_1, \ldots, v_{n+1})$. Then p is called a path from vertex v_1 to vertex v_{n+1} in G and we say that v_{n+1} is reachable from v_1, writing $(v_1 \rightarrow v_{n+1})$.

Here are some new definitions. A node v in a graph $G = (V, E)$ is called a sink, if for every node w in G that is reachable from v, v is also reachable from w. The bottom of a graph is the subset of all nodes that are sinks, i.e., $\mathrm{bottom}(G) = \{v \in V \mid \forall w \in V : (v \rightarrow w) \Rightarrow (w \rightarrow v)\}$. You have to calculate the bottom of certain graphs.

Input Specification

The input contains several test cases, each of which corresponds to a directed graph G. Each test case starts with an integer number v, denoting the number of vertices of $G = (V, E)$, where the vertices will be identified by the integer numbers in the set $V = \{1, \ldots, v\}$. You may assume that $1 \le v \le 5000$. That is followed by a non-negative integer e and, thereafter, e pairs of vertex identifiers $v_1, w_1, \ldots, v_e, w_e$ with the meaning that $(v_i, w_i) \in E$. There are no edges other than specified by these pairs. The last test case is followed by a zero.

Output Specification

For each test case output the bottom of the specified graph on a single line. To this end, print the numbers of all nodes that are sinks in sorted order separated by a single space character. If the bottom is empty, print an empty line.

Sample Input

```
3 3
1 3 2 3 3 1
2 1
1 2
0
```

Sample Output

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1 3
2
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