Topological sort   P14952_en

We must perform n tasks, one at a time. Furthermore, some tasks must be done before others: there are m precedence relations between tasks. Write a program to print a way to sort the n tasks satisfying the m given precedences.

Input

Input consists of several cases. Every case begins with n, followed by m, followed by m distinct pairs $x\ y$ that indicate that task x must be done before task y. You can assume $1 \leq n \leq 10^4, 0 \leq m \leq 10n$, and that the tasks are numbered from 0 to $n - 1$.

Output

For every case, print the lexicographically smallest order of the n tasks that fulfills the m given precedences. There will always be, at least, one solution.

Sample input

```
3 1
1 0

1 0

10 18
0 3   4 8
8 3   2 1
5 7   5 6
6 8   4 2
4 0   8 1
2 8   3 1
6 2   7 3
7 2   5 0
0 6   9 5
```

Sample output

```
1 0 2
0
4 9 5 0 6 7 2 8 3 1
```

Problem information

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