
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

Author : Salvador Roura

Translator : Salvador Roura

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