Problem C - That Business on Cato Neimoidia

Time limit: 1 second

Obi-Wan is on his quest to deal with that business on Cato Neimoidia. However, before he does so, he must first deal with N other businesses (conveniently numbered from 0 to $N - 1$). The thing is some of these businesses may depend on others, i.e., business A might need to be completed before business B, otherwise things will go wrong and Anakin will lose another arm.

Furthermore, each business has a priority level. Whenever possible, it is always better for Obi-Wan to deal with the businesses highest priority first. In this problem, business A has a higher priority than business B if, and only if, $A < B$. Therefore, of all the possible orders in which Obi-Wan can deal with the businesses, he must find the lexicographic-ally smallest such order.

Given the list of all the relationships between these businesses, help Obi-Wan figure out the unique order in which they must be solved (if possible at all). You'll be rewarded with a decent amount of death sticks.

Input

The first line will contain N $(1 \leq N \leq 100,000)$, which is the number of businesses, and M $(0 \leq M \leq 200,000)$, which is the number of relationships.

The following M lines each contain two integers A_i and B_i $(0 \leq A_i, B_i \leq N - 1, A_i \neq B_i)$, meaning that business A_i must be solved before business B_i.

Output

Your program should output several lines with permutation of the numbers from 0 to $N - 1$, representing the order in which Obi-Wan should deal with his businesses (every number in a different line). If it is not possible to deal with the businesses, print only $*$ and watch Anakin lose another arm.

Sample Input

```
5 3
0 1
3 2
4 3
```

Sample Output

```
0
1
4
3
2
```

Sample Input

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

Sample Output

```
*
```

Sample Input

```
3 1
2 0
```

Sample Output

```
1
2
0
```