Problem K. King's Rout

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	512 megabytes

The great rout will be held this evening in the palace of his majesty Nassah II, the king of Occorom. There are n guests invited. While they are preparing evening dresses and collecting fresh rumors to talk about, the chief valet of the palace has a tricky task to solve: choose the right order for persons to arrive to the palace.

Guests always arrive one by one, that is, no two guests may arrive at the same moment of time. Due to the court etiquette, there are some limitations on the order of the arrival. For example, a notable landlord should arrive later than all his vassals, but should be earlier than his wives. After reading "Etiquette guide for dummies" the valet found out m order conditions to be satisfied. Each of them has a form: a_i must come before b_i. Rules are so complicated that some conditions may appear in the list two or more times.

So far the problem seems to be easy and familiar. But some guests (actually, all of them) tried to bribe valet to allow them arrive before others. So valet sorted guests according to their payoffs amounts and decided that guest number 1 should arrive as early as possible (without violating etiquette rules), among all such options valet chooses the one with the guest number 2 arriving as early as possible, and so on. All payoffs were different, so valet has no problem in selecting guests priority.

Help valet to find the best possible schedule. Guests already have numbers in valet's private list of priority, so you will not know bribes amounts and will not be accused in complicity in corruption.

Input

The first line of the input contains two integers n and m ($1 \le n \le 200\,000$, $0 \le m \le 400\,000$) — the number of guests invited and the number of order conditions respectively.

Next m lines describe the conditions, each of them containing a single pair a_i, b_i ($1 \le a_i, b_i \le n$). That means the guest a_i is required to come **earlier** than the guest b_i.

Output

Print n different integers from 1 to n to describe the best possible order (according to valet's understanding) for guests to arrive. It is guaranteed that at least one valid order exists.

Examples

standard input	standard output
3 1 3 1	3 1 2
5 6 2 1 5 2 4 1 5 4 3 1 5 3	5 2 3 4 1

Note

In the first sample all the permutations where guest number 1 comes after guest number 3 are acceptable according to etiquette. As the valet wants the guest number 1 to come as early as possible he puts him on the second slot and the guest number 3 on the first slot. There is only one slot remaining for the guest number 2.