Travel

Problem Description

Y is an OIer who loves to travel. She comes to Country X and plans to visit every city.

Y learns that there are m two-way roads between the cities in Country X. Each two-way road connects two cities. There are no two roads connecting the same pair of cities, and there is no road connecting a city to itself. And, starting from any city, you can reach any other city by these roads. Y can only travel from one city to another via these roads.

Y's travel plan is as follows: pick any city as a starting point, and from there, walk to a new city by choosing a road connected to the current city, or back to the previous city by following the road she took when she entered the city for the first time. When Y returns to her starting point, she can choose to end her trip or continue her trip. It should be noted that Y requires that every city should be visited in the touring scheme.

To make her trip more meaningful, Y decides to record the number of the new city (including the starting point) every time she arrives. She knew this would create a sequence of length n. She wants the sequence to have the smallest lexicographic order, can you help her? For two sequences A and B, both of length n, we say that sequence A has less lexicographic order than B if and only if there exists a positive integer x that satisfies the following conditions:

- For any positive integer $1 \leq i < x$, the ith element A_i of sequence A and the ith element B_i of sequence B are the same.
- The value of the xth element of sequence A is less than the value of the xth element of sequence B.

Input

The input file has m+1 lines in total. The first line contains two integers n and m ($m \leq n$) separated by a space.

For the next m lines, each of them contains two integers u and v ($1 \leq u,v \leq n$), indicating that there is a road between the cities numbered u and v. The two integers are separated by a space.

Output

The output file contains one line with n integers, representing the sequence with the smallest lexicographic order. Two adjacent integers are separated by a space.

Sample Input 1

6 5
1 3
2 3
2 5

3 4

4 6

Sample Output 1

1 3 2 5 4 6

Sample Input 2

6 6

1 3

2 3

2 5

3 4

4 5

4 6

Sample Output 2

1 3 2 4 5 6

Hint

[Data Scale and Conventions]

For 100% of the data and all examples, $1 \le n \le 5000$, and $m = n - 1$ or $m = n$.

For different test points, we agree on the scale of the data as follows:

Test Point	$n =$	$m =$	Special Qualities
1, 2, 3	10		None
4, 5	100		None
6, 7, 8	1000	$n - 1$	Each city is at most connected to two cities
9, 10	1000		None
11, 12, 13	5000		Each city is at most connected to three cities
14, 15	5000		None
16, 17	10		None
18, 19	100	n	None
20, 21, 22	1000		Each city is at most connected to two cities
23, 24, 25	5000		None