

## Problem K

# King's Dilemma

Quadradonia's king is willing to repair some of the roads that connect his kingdom. The kingdom has  $N$  cities and  $M$  roads, each road connects two cities  $u$ , and  $v$ , in such way that you can travel from  $u$  to  $v$  and from  $v$  to  $u$ . As Quadradonia's has invested in several infrastructure projects during the last year it is not possible to repair more than  $K$  roads, so the king decided to repair exactly that number of roads, no more, no less.

There are some cities that have roads with more issues than others, that is why the king decided to classify the cities by how much they need the roads to be repaired and use that information to decide what roads to repair. A needness index has been set to the cities numbering them from 1 to  $N$ , so that the city with the number 1 has the most need for the roads to be repaired, and the city with the number  $N$  has the less need. Using these indexes the needness for a road to be repaired can be stated as follow: if a road  $R_1$  connects cities with indexes  $u$  and  $v$  where  $u < v$ , and another road  $R_2$  connects cities with indexes  $x$ , and  $y$  where  $x < y$ , then  $R_1$  has more need to be built if  $u < x$  or if  $u = x$  and  $v < y$ .

One thing that is important for the king is that the  $K$  roads that will be repaired should be connecting all the cities in the kingdom, this is, there should be a path between any pair of cities using only the  $K$  roads, if he can accomplish this, it will demonstrate his willingness to repair the roads to all cities, even if not all roads in the kingdom are being repaired this time. He also wants the set of roads to be repaired to be the one with most need, given two sets of roads  $S$  and  $S'$  each with their roads sorted from highest to lowest needness the set  $S$  has more need to be repaired if  $S_i$  needness is greater than  $S'_i$ .

Can you help the king find the set of roads to repair?

### Input

The first line of input contains three integers separated by space  $N$  ( $1 \leq N \leq 100$ ),  $M$  ( $1 \leq M \leq \frac{N(N-1)}{2}$ ),  $K$  ( $1 \leq K \leq 1000$ ) representing the number of cities in the kingdom, the number of roads in the kingdom, and the number of roads that should be repaired, respectively. The following  $M$  lines contains two integer numbers separated by a space  $u_i$  and  $v_i$ , representing that the  $i$ -th road connects cities with needness indexes  $u_i$  and  $v_i$  ( $u_i < v_i$ ).

### Output

If a set of roads that satisfies the kings needs can be repaired print a line with exactly  $N$  integer numbers separated by a space where the  $i$ -th number represents the number of roads to be repaired that connect city with needness  $i$ . If no such set exists print "Impossible".

Input example 1	Output example 1
5 10 10 1 2 1 3 1 4 1 5 2 3 2 4 2 5 3 4 3 5 4 5	4 4 4 4 4

<b>Input example 2</b> 3 2 3 1 2 1 3	<b>Output example 2</b> Impossible
<b>Input example 3</b> 4 2 2 1 2 3 4	<b>Output example 3</b> Impossible