
Problem A. Minimums on the Edges

Input file: *standard input*
Output file: *standard output*
Time limit: 4 seconds
Memory limit: 512 mebibytes

You are given an undirected graph with n vertices and m edges. Each vertex can contain several tokens. Initially, there are no tokens in the vertices, but you have s tokens which you can distribute between them.

Let the *capacity* of each edge be the minimal number of tokens in its endpoints. Your goal is to maximize the sum of capacities of all edges.

Input

The first line contains three integers n , m and s : the number of vertices, the number of edges and the number of tokens to distribute ($1 \leq n \leq 18$, $0 \leq m \leq 100\,000$, $0 \leq s \leq 100$).

The next m lines describe the edges. The i -th of them describes i -th edge and contains two integers u and v : the indices of vertices it connects ($1 \leq u, v \leq n$).

It is guaranteed that there are no self-loops in the graph. **However, there can be multiple edges between the same pair of vertices.**

Output

Print n numbers $a_1, a_2, \dots, a_n$ ($0 \leq a_i \leq s$), where a_i is the number of tokens you put on the i -th vertex. The sum of printed integers must be equal to s . The sum of capacities of all edges must be the maximum possible.

If there are multiple optimal answers, you can print any one of them.

Examples

standard input	standard output
4 4 6 1 2 2 3 3 1 1 4	2 2 2 0
3 7 7 1 2 1 2 1 2 1 3 1 3 2 3 2 3	3 2 2

Note

In the first sample, the sum of capacities is equal to $\min(2, 2) + \min(2, 2) + \min(2, 2) + \min(2, 0) = 2 + 2 + 2 + 0 = 6$.

In the second sample, the sum of capacities is equal to $\min(3, 2) + \min(3, 2) + \min(3, 2) + \min(3, 2) + \min(3, 2) + \min(2, 2) + \min(2, 2) = 2 + 2 + 2 + 2 + 2 + 2 + 2 = 14$.