D. Cycle in Graph

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You've got a undirected graph G, consisting of n nodes. We will consider the nodes of the graph indexed by integers from 1 to n. We know that each node of graph G is connected by edges with at least k other nodes of this graph. Your task is to find in the given graph a simple cycle of length of at least $k+1$.

A *simple cycle* of length d $(d>1)$ in graph G is a sequence of distinct graph nodes $v_1, v_2, ..., v_d$ such, that nodes v_1 and v_d are connected by an edge of the graph, also for any integer i $(1 \le i < d)$ nodes v_i and v_{i+1} are connected by an edge of the graph.

Input

The first line contains three integers n, m, k $(3 \le n, m \le 10^5; 2 \le k \le n$ - $1)$ — the number of the nodes of the graph, the number of the graph's edges and the lower limit on the degree of the graph node. Next m lines contain pairs of integers. The i-th line contains integers a_i, b_i $(1 \le a_i, b_i \le n; a_i \ne b_i)$ — the indexes of the graph nodes that are connected by the i-th edge.

It is guaranteed that the given graph doesn't contain any multiple edges or self-loops. It is guaranteed that each node of the graph is connected by the edges with at least k other nodes of the graph.

Output

In the first line print integer r $(r \ge k+1)$ — the length of the found cycle. In the next line print r distinct integers $v_1, v_2, ..., v_r$ $(1 \le v_i \le n)$ — the found simple cycle.

It is guaranteed that the answer exists. If there are multiple correct answers, you are allowed to print any of them.

Examples

input
3 3 2 1 2 2 3 3 1

output
3 1 2 3

input
4 6 3 4 3 1 2 1 3 1 4 2 3 2 4

output
4 3 4 1 2