H. Cycle in Graph

Time limit: 2s Memory limit: 256 MB

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
```