Problem F
Two Sets

You are given an undirected graph with N vertices and M edges, with vertices numbered from 1 to N.

You have to select two integers p and q such that:

- $N < (p+1)(q+1)$
- There exists a non-empty set of vertices S_1 such that for every vertex $u \in S_1$, there are **at least** p other vertices in S_1 that share an edge with u.
- There exists a set of vertices S_2 of size **at least** q such that for every vertex $u \in S_2$, there are no vertices in S_2 that share an edge with u.

You have to find p, q, along with any S_1 and S_2 that satisfy the requirements above. It can be proven that such p and q always exist.

Input

The first line contains two integers N and M ($1 \le N \le 2000$; $0 \le M \le \min(\frac{N(N-1)}{2}, 200\,000)$). Each of the next M lines contains two integers u and v ($1 \le u < v \le N$) representing the two vertex numbers that are connected by an edge. All the given edges are different.

Output

The first line contains two integers p and q. The second line contains an integer $|S_1|$ followed by $|S_1|$ integers representing the vertex numbers in S_1. The third line contains an integer $|S_2|$ followed by $|S_2|$ integers representing the vertex numbers in S_2.

Sample Input 1	Sample Output 1
4 2 1 2 3 4	1 2 2 1 2 2 3 1

Explanation of Sample 1: You selected $p = 1$, $q = 2$, $S_1 = \{1, 2\}$, and $S_2 = \{1, 3\}$.

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