Instagraph

(problem by Pål Grønås Drange)

A celebrity in a social network is somebody with many followers, but who doesn't follow them back. More precisely, a person is a *celebrity* for a group of people, if every member of the group follows the person and the person follows nobody in the group. The *celebrity centrality* of person v, written $\mathrm{CC}(v)$, is the maximum size of such a group.

We model the social network as a directed graph with N vertices $1, \ldots, N$. A directed edge from u to v means that person u follows person v. For example, sample input 1 corresponds to the graph below, where we have $\mathrm{CC}(1) = 0$, $\mathrm{CC}(2) = 1$, and $\mathrm{CC}(5) = 2$.

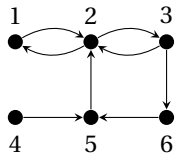

Figure 1: Sample Input 1

Input

The input consists of one line with two integers N and M ($1 \leq N \leq 200\,000$, $0 \leq M \leq 1\,000\,000$), the number of vertices and the number of directed edges, followed by M lines each with two distinct integers u and v ($1 \leq u, v \leq N$), indicating a directed edge from u to v. There are no duplicate edges.

Output

Output two integers: the smallest v with the maximum celebrity centrality and the value $\mathrm{CC}(v)$.

Examples

Sample input 1

```
6 8
1 2
2 1
2 3
3 2
3 6
4 5
5 2
6 5
```

Sample output 1

```
5 2
```

Sample input 2

```
1 0
```

Sample output 2

```
1 0
```

Limits

Time limit is 6 seconds.

Memory limit is 1024 megabytes.