J. First Non-Bipartite Edge

time limit per test: 2 seconds

memory limit per test: 64 megabytes

A bipartite graph is such an undirected graph that it is possible to split its vertices in two parts in such a way, that edges connect vertices from different parts only.

In this problem, m edges are added one by one to initially empty graph with n vertices. Your task is to determine the index of the first edge such that the graph is not bipartite after its addition.

An empty graph of n vertices is a graph containing n vertices and no edges.

Input

The first line contains two integers n and m ($1 \le n, m \le 3 \cdot 10^5$) — the number of vertices and the number of added edges.

The next m lines contain information about m edges as pairs of integers a_i, b_i ($1 \le a_i, b_i \le n$). The graph does not contain multiple edges and loops at any moment of time.

Output

Print the index of the answer edge (the edges are numbered from 1 in the order of their appearance in the input), or -1, if there is no such edge.

Examples

input Copy

```
3 3
1 2
2 3
1 3
```

output Copy

```
3
```

input Copy

```
4 5
1 2
2 3
3 4
1 4
2 4
```

output Copy

```
5
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