Shortest Cycle

Time: 1 sec / Memory: 2 GB

Problem Statement

Given an undirected graph, what is its *girth*, i.e., the length of its shortest cycle.

Input

The first input line has two integers n and m: the number of nodes and edges.
The nodes are numbered $1, 2, \ldots, n$.
After this, there are m lines describing the edges. Each line has two integers a and b: there is an edge between nodes a and b.
You may assume that there is at most one edge between each two nodes.

Output

Print one integer: the girth of the graph. If there are no cycles, print -1.

Constraints

- $1 \leq n \leq 2500$
- $1 \leq m \leq 5000$

Example

Input:

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

Output: