C - Bipartize   Editorial (/contests/abc427/tasks/abc427_c/editorial)   🇯🇵 / 🇬🇧

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 350 points

Problem Statement

There is a simple undirected graph with N vertices and M edges. The graph consists of vertex 1, vertex $2, \ldots$, vertex N, and the i-th edge $(1 \leq i \leq M)$ connects vertices u_i and v_i.

You will perform the following operation zero or more times:

- Choose one edge that has not been deleted yet, and delete it.

Your goal is to make the graph bipartite. Find the minimum number of operations needed to make the graph after the operations bipartite.

▶ What it means for a graph to be simple?

▶ What is a bipartite graph?

Constraints

- $2 \leq N \leq 10$
- $1 \leq M \leq \dfrac{N(N-1)}{2}$
- $1 \leq u_i < v_i \leq N \ (1 \leq i \leq M)$
- The given graph is simple.

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- All input values are integers.

Input

The input is given from Standard Input in the following format:

$$
\begin{array}{ll}
N & M \\
u_1 & v_1 \\
u_2 & v_2 \\
\vdots & \\
u_M & v_M
\end{array}
$$

Output

Print the number of operations that need to be performed to make the graph bipartite.

Sample Input 1   Copy

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

Sample Output 1   Copy

```
2
```

You can make the graph bipartite by deleting two edges: for example, the edge connecting vertices 1 and 3, and the edge connecting vertices 3 and 5.

It is impossible to make the graph bipartite by performing one or less operations, so print 2.

Sample Input 2   Copy

```
2 1
1 2
```

Sample Output 2   Copy

Copy

```
0
```

The graph is bipartite from the beginning. Thus, the number of operations that need to be performed is 0.

Sample Input 3   Copy

Copy

```
10 20
5 9
1 4
3 8
1 6
4 10
5 7
5 6
3 7
3 6
5 10
1 3
3 4
6 7
1 2
4 7
1 5
1 9
9 10
4 5
8 9
```

Sample Output 3   Copy

Copy

```
5
```

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