

Two Paths (350 points)

Introduction

In Emmeria there are **N** cities, connected by **M** two-way roads. The cities are numbered from 1 to N. You can get from one city to another moving along the roads.

The "Sterling and Son" company, has won a tender to repair two paths in Emmeria. A path is a sequence of different cities, connected sequentially by roads. The company is allowed to choose by itself the paths to repair. The only condition they have to meet is that the two paths shouldn't cross (i.e. shouldn't have common cities).

The profit that the company will make equals the product of the lengths of the two paths. The length of each road is 1, and the length of a path equals the amount of roads in it. Find the maximum possible profit for the company. Note that you **MUST** pick two paths or output 0 if it's not possible to pick two paths that don't cross. You can assume that there are no "cycles", i.e. you can't pass through the same city more than once without back-tracking.

Input Specifications

The first line contains 2 integers **N** ($2 \leq N \leq 1000$) and **M** ($1 \leq M \leq 1000$), where N is the amount of cities in the Emmeria and M is the number of roads. This will be followed by M lines containing 2 integers **A** and **B** ($1 \leq A, B \leq N$), denoting the cities that the road connects.

Output Specifications

Output the maximum possible profit.

Sample Input/Output

Input

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

Output

```
1
```

Explanation

The maximum profit of 1 can be made by picking the road connecting cities 1 and 2, and that connecting 3 and 4.

Input

```
10 9
1 2
```

2 3
3 4
4 5
4 6
4 7
7 8
8 9
9 10

Output

12

Explanation

The maximum profit of 12 can be made by picking the path 1-2-3-4-6 and 7-8-9-10.