E. Strongly Connected City 2

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Imagine a city with n junctions and m streets. Junctions are numbered from 1 to n.

In order to increase the traffic flow, mayor of the city has decided to make each street one-way. This means in the street between junctions u and v, the traffic moves only from u to v or only from v to u.

The problem is to direct the traffic flow of streets in a way that maximizes the number of pairs (u, v) where $1 \le u, v \le n$ and it is possible to reach junction v from u by passing the streets in their specified direction. Your task is to find out maximal possible number of such pairs.

Input

The first line of input contains integers n and m, (), denoting the number of junctions and streets of the city.

Each of the following m lines contains two integers u and v, ($u \neq v$), denoting endpoints of a street in the city.

Between every two junctions there will be at most one street. It is guaranteed that before mayor decision (when all streets were two-way) it was possible to reach each junction from any other junction.

Output

Print the maximal number of pairs (u, v) such that that it is possible to reach junction v from u after directing the streets.

Examples

input
5 4 1 2 1 3 1 4 1 5
output
13

input
4 5 1 2 2 3 3 4 4 1 1 3
output
16

input
2 1 1 2
output
3

input

```
6 7
1 2
2 3
1 3
1 4
4 5
5 6
6 4
```

output

```
27
```

Note

In the first sample, if the mayor makes first and second streets one-way towards the junction 1 and third and fourth streets in opposite direction, there would be 13 pairs of reachable junctions:
$\{(1, 1), (2, 2), (3, 3), (4, 4), (5, 5), (2, 1), (3, 1), (1, 4), (1, 5), (2, 4), (2, 5), (3, 4), (3, 5)\}$