

Build a Bridge (zoo)

The monkeys at the zoo of Pordenone have N trees (numbered from 0 to $N - 1$) to play on, with M suspended bridges connecting some pairs of them. The bridges are numbered from 0 to $M - 1$, and bridge i connects trees U_i and V_i bidirectionally. There is at most one bridge between any pair of trees, and it is possible to get from tree 0 to every other tree by crossing bridges.


The **distance** between two trees is the minimum number of bridges one has to cross to get from one tree to the other (without touching the ground).



Figure 1: Orodeda, the coolest monkey in Pordenone.

Alessandro, the zookeeper, wants to add a new bridge to make the monkey area fancier. However, he is facing a problem: the monkey sitting on tree 0 and the one sitting on tree $N - 1$ are sworn enemies, and if he were to make them fight he would be fired instantly. The monkeys would fight if, after installing the new bridge, the distance between tree 0 and $N - 1$ was less than before. Also, Alessandro is not allowed to install a bridge between two trees that are already directly connected by a bridge.

How many possible choices are there for the new bridge that would not get Alessandro fired?

 Among the attachments of this task you may find a template file `zoo.*` with a sample incomplete implementation.

Input

The input file consists of:

- a line containing integers N , M .
- M lines, the i -th of which consisting of integers U_i , V_i .

Output





The output file must contain a single line consisting of 64-bit integer C , the number of ways to choose the location of the new bridge.

Constraints

- $1 \leq N \leq 100\,000$.
- $1 \leq M \leq 300\,000$.
- $0 \leq U_i \neq V_i < N$ for each $i = 0 \dots M - 1$.
- It is possible reach any other tree from tree 0 by crossing bridges.
- There is at most one bridge between any pair of trees.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.

- **Subtask 2** (24 points) $N \leq 100, M \leq 500$.

- **Subtask 3** (33 points) $N \leq 5000$.

- **Subtask 4** (43 points) No additional limitations.


Examples

input	output
5 5 0 1 1 2 0 2 2 3 3 4	1
10 12 5 7 5 0 2 1 6 7 9 8 1 8 3 4 6 5 1 3 9 0 0 1 5 9	33

Explanation

In the **first sample case** there are 5 trees and 5 bridges. Initially, it is possible to reach tree 4 from tree 0 by crossing 3 bridges: 0—2—3—4.

- If Alessandro were to add a bridge between trees 0 and 4 it would be possible to reach tree 4 by crossing 1 bridge: 0—4.
- If he were to add a bridge between trees 0 and 3 it would be possible to reach tree 4 by crossing 2 bridges: 0—3—4.
- If he were to add a bridge between trees 1 and 4 it would be possible to reach tree 4 by crossing 2 bridges: 0—1—4.
- If he were to add a bridge between trees 1 and 3 it would not be possible to reach tree 4 by crossing fewer than 3 bridges.
- If he were to add a bridge between trees 2 and 4 it would be possible to reach tree 4 by crossing 2 bridges: 0—2—4.

The answer is therefore 1, since the only bridge that Alessandro could build without getting fired is 1—3.