Problem K
Counting Cycles
Time Limit: 4 seconds

Given an undirected graph, count the number of simple cycles in the graph. Here, a simple cycle is a connected subgraph all of whose vertices have degree exactly two.

Input

The input consists of a single test case of the following format.

$$\begin{array}{l} n\ m \\ u_1\ v_1 \\ \vdots \\ u_m\ v_m \end{array}$$

A test case represents an undirected graph G.

The first line shows the number of vertices n ($3 \leq n \leq 100\,000$) and the number of edges m ($n - 1 \leq m \leq n + 15$). The vertices of the graph are numbered from 1 to n.

The edges of the graph are specified in the following m lines. Two integers u_i and v_i in the i-th line of these m lines mean that there is an edge between vertices u_i and v_i. Here, you can assume that $u_i < v_i$ and thus there are no self loops.

For all pairs of i and j ($i \neq j$), either $u_i \neq u_j$ or $v_i \neq v_j$ holds. In other words, there are no parallel edges.

You can assume that G is connected.

Output

The output should be a line containing a single number that is the number of simple cycles in the graph.

Sample Input 1	Sample Output 1
4 5 1 2 1 3 1 4 2 3 3 4	3

Sample Input 2	Sample Output 2
7 9 1 2 1 3 2 4 2 5 3 6 3 7 2 3 4 5 6 7	3

Sample Input 3	Sample Output 3
4 6 1 2 1 3 1 4 2 3 2 4 3 4	7