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.

$$
\begin{aligned}
&n\ m\\
&u_1\ v_1\\
&\vdots\\
&u_m\ v_m
\end{aligned}
$$

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

```
7 9
1 2
1 3
2 4
2 5
3 6
3 7
2 3
4 5
6 7
```

Sample Output 2

```
3
```

Sample Input 3

```
4 6
1 2
1 3
1 4
2 3
2 4
3 4
```

Sample Output 3

```
7
```