

8376 Counting Cycles

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 file contains several test cases, each of them as described below.

Each test case has the following format.

```
n    m
u1 v1
⋮
um vm
```

A test case represents an undirected graph G .

The first line shows the number of vertices n ($3 \leq n \leq 100000$) 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

For each test case, the output should be a line containing a single number that is the number of simple cycles in the graph.

Sample Input

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

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

Sample Output

3
3
7