

A planar graph is defined as follows

Definition: A *planar graph* is one that can be drawn on a plane in such a way that there are no “edge crossings,” i.e. edges intersect only at their common vertices.

The figure on the right shows a planar graph. The six different faces of the graph are colored with different colors and are also numbered from 1 to 6. You will have to count the number of faces of a given planar graph.

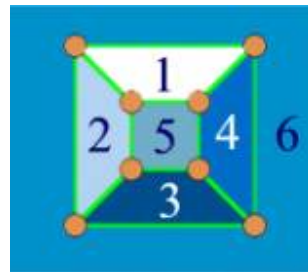


Figure: A planar graph

Input

The input contains several sets of inputs. Each set of input contains two integers N , E in the first line, where N denotes the number of nodes of the graph and E denotes the number of edges. The next E lines contain the description of E edges of a planar graph. Each edge description contains two case sensitive English alphabets n_1 and n_2 , which indicates that vertex n_1 , and n_2 are connected by an edge.

Input is terminated by end of file.

Output

For each set of input print the number of faces in that graph in a single line.

Sample Input

```
1 0
3 3
A B
B C
A C
```

Sample Output

```
1
2
```