

Problem F. Independent Set

Input file: `independent.in`
Output file: `independent.out`
Time limit: 2 seconds
Memory limit: 256 megabytes

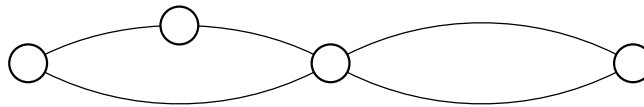
The notion of series-parallel graph is very important in electrical engineering and other applied sciences. Such graphs are used to represent electrical schemes, data networks, etc.

In this program a graphs may contain parallel edges.

The series-parallel graph is defined recursively as follows.

1. The two-vertex graph with vertices s and t and an edge st is series-parallel graph with source s and sink t . Let us denote such graph as g .
2. If G_1 is a series-parallel graph with source s_1 and sink t_1 and G_2 is a series-parallel graph with source s_2 and sink t_2 , then the graph obtained by merging together vertices t_1 and s_2 is a series-parallel graph with source s_1 and sink t_2 , denoted as SG_1G_2 .
3. If G_1 is a series-parallel graph with source s_1 and sink t_1 and G_2 is a series-parallel graph with source s_2 and sink t_2 , then the graph obtained by merging together vertices s_1 and s_2 (denote the new vertex as s_{12}), and merging together vertices t_1 and t_2 (denote the new vertex as t_{12}) is a series-parallel graph with source s_{12} and sink t_{12} , denoted as PG_1G_2 .

Using the above definition recursively, we can obtain large series-parallel graphs. For example, the graph on the figure below is denoted as $SPSgggPgg$.



You are given the series-parallel graph. Find the size of the maximal independent set in it. The independent set is the set of vertices no two vertices in which are connected by an edge.

Input

The input file contains one line — the description of a series-parallel graph. The description is the correct expression which contains only letters ‘S’, ‘P’ and ‘g’. The length of the expression doesn’t exceed 100 000.

Output

Output one integer number — the size of the maximal independent set in the given graph.

Example

| <code>independent.in</code> | <code>independent.out</code> |
|-----------------------------|------------------------------|
| <code>SPSgggPgg</code> | 2 |