



## Task: Homework

Little Helena recently finished her first year of primary school. She is a model student, has straight A's, and has a huge passion for mathematics. She is currently on a well-deserved vacation with her family, but she's starting to miss her daily math homework. Luckily, her older brother decided to quench her intellectual thirst, and gave her the following problem.

A *valid expression* is defined recursively as follows:

- the string  $?$  is a valid expression which represents a number.
- if  $A$  and  $B$  are valid expressions, then so are  $\min(A, B)$  and  $\max(A, B)$ , where the former represents a function returning the smaller of its two arguments, while the latter represents a function returning the larger of its two arguments.

For example, expressions  $\min(\min(?, ?), \min(?, ?))$  and  $\max(?, \max(?, \min(?, ?)))$  are valid according to the definition above, but expressions  $??$ ,  $\max(\min(?))$  and  $\min(?, ?, ?)$  are not.

Helena is given a valid expression containing a total of  $N$  question marks. Each question mark is to be replaced with a number from the set  $\{1, 2, \dots, N\}$  in such a way that each number from this set appears exactly once in the expression. In other words, the question marks are replaced by a permutation of the numbers from 1 to  $N$ .

Once the question marks have been replaced by numbers, the expression can be evaluated and its value will be an integer between 1 and  $N$ . Considering all the ways of assigning numbers to question marks, how many different values can Helena obtain after evaluating the expression?

### Input

The first and only line contains a single valid expression.

### Output

Output a single integer between 1 and  $N$ , the number of different values obtainable by evaluating the expression.

### Scoring

In all subtasks it holds that  $2 \leq N \leq 1\,000\,000$ .

Subtask	Score	Constraints
1	10	$N \leq 9$
2	13	$N \leq 16$
3	13	Each function in the expression has at least one question mark as an argument.
4	30	$N \leq 1000$
5	34	No additional constraints.



## Examples

**input**

`min(min(?,?),min(?,?))`

**output**

1

**input**

`max(?,max(?,min(?,?)))`

**output**

2

**input**

`min(max(?,?),min(?,max(?,?)))`

**output**

3

### Clarification of the first example:

No matter how the numbers are assigned, the value of the resulting expression will always equal to the minimum of the set  $\{1, 2, 3, 4\}$ , which is 1. Therefore, there is only one possible value.

### Clarification of the second example:

The numbers 3 and 4 can be obtained as  $4 = \max(4, \max(3, \min(2, 1)))$  and  $3 = \max(3, \max(2, \min(1, 4)))$ . It can be shown that values 1 and 2 are not attainable and so the answer is 2.