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 $\{1, 2, \ldots, N\}$ 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Once the question marks have been replaced by numbers, the expression can be evaluated and its value will be an integer between 1 and N. Considering all the ways of assigning numbers to question marks, how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	input	input
`min(min(?,?),min(?,?))`	`max(?,max(?,min(?,?)))`	`min(max(?,?),min(?,max(?,?)))`
output	**output**	**output**
1	2	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.