**The Value of Expression**

**Problem Description**

Two operations are defined for 1-bit binary variables:

|  |  |
| --- | --- |
| The Operator | Algorithm |
| ⊕ | 0⊕0=0 |
| 0⊕1=1 |
| 1⊕0=1 |
| 1⊕1=1 |
| × | 0×0=0 |
| 0×1=0 |
| 1×0=0 |
| 1×1=1 |

The precedence of the operation is:

1. Evaluate what is inside the parentheses first, then evaluate what is outside parentheses.
2. “×” operation has higher precedence than “⊕” operation, that is, when evaluating the operation, evaluate × operation first, then evaluate ⊕ operation.

For example, when evaluating A⊕B×C, first evaluate B×C, then compute the result with A using the operator ⊕.

Now given an unfinished expression, such as \_+(\_\*\_), please fill in the number 0 or 1 in the horizontal line. How many ways are there to make this expression equal to 0?

**[Explanation for Sample Input and Output]**

The given expression includes the horizontal lines : \_+(\_\*\_)

When filling in (0, 0, 0), (0, 1, 0), (0, 0, 1), the value of the expression is 0. Therefore, there are 3 ways of filling in.

**[Constraints]**

For 20% of the data, 0 ≤ L ≤ 10.

For 50% of the data, 0 ≤ L ≤ 1,000.

For 70% of the data, 0 ≤ L ≤ 10,000.

For 100% of the data, 0 ≤ L ≤ 100,000.

For 50% of the input expression, there are no parentheses.

**Input**

The first line is an integer L, which indicates the number of operators and parentheses in the given expression excluding the horizontal line.

The second line is a string including L characters, which only contains 4 kinds of characters: ‘(’, ‘)’, ‘+’, ‘\*’. In which, ‘(’ and ‘)’ are left and right parentheses, and “+” and “\*” represents the operators defined above: “⊕” and “×”. This line of characters gives the operators and parentheses in a given expression in order, excluding variables.

**Output**

Containing a positive integer, that is, the total number of solutions. Note: This could be a very large number, please output the result of the number of schemes modulo 10007.

**Sample Input**

4

+(\*)

**Sample Output**

3