

Problem E. Ketek Counting

Input file: *standard input*
Output file: *standard output*
Time limit: 8 seconds
Memory limit: 64 mebibytes

Note the unusual Memory Limit value for this task

Define a Ketek to be a sentence that reads the same forwards and backward, by word. For example, ‘fall leaves after leaves fall’ is a Ketek since the words in reverse order are the same as the original order.

Given a string consisting of lower-case letters and the character ‘?’, count the number of distinct Keteks you can make by replacing every ‘?’ with lower-case letters (one letter per ‘?’), and optionally adding spaces between any letters. Note that a Ketek cannot contain any ‘?’; they all must be replaced exclusively by lower-case letters.

For example, if we start with the string ‘ababa’, we can form 3 different Keteks: ‘ababa’, ‘a bab a’ and ‘a b a b a’.

If we start with the string ‘?x?z’ instead, we can form 703 different Keteks:

- There are $26^2 = 676$ ways to replace the ?’s and form a one-word Ketek.
- Add spaces to form ‘? x? z’. There are 26 ways to form a Ketek (the first ‘?’ must be z; the other can be any lower-case letter).
- Add a space to form ‘?x ?z’. There is no way to form a Ketek.
- Add spaces to form ‘? x ? z’. There is one way to form a Ketek (the first ‘?’ must be z; the second must be x).

The total is $676 + 26 + 0 + 1 = 703$.

Two Keteks are different if they have a different number of words, or there is some word index where the words are not the same.

Input

The single line of input contains a string s ($1 \leq |s| \leq 30\,000$), which consists of lower-case letters (‘a’ – ‘z’) and the character ‘?’.

Output

Output the number of distinct Keteks that can be formed by replacing the ?’s with lower-case letters and adding spaces. Since this number may be large, output it modulo 998 244 353.

Examples

standard input	standard output
ababa	3
?x?z	703