Problem J. JQU

Time limit: 1 second
Memory limit: 1024 mebibytes

The m-function is a well known function that takes a non-empty string as an argument and cycle shifts each letter of the argument by one. That is, $m(\text{a}) = \text{b}$, $m(\text{z}) = \text{a}$, $m(\text{icpc}) = \text{jdqd}$, etc.

You are given a string consisting of lowercase Latin letters only. You can insert some parentheses into the string and treat some of the letters m as the m-functions. For example, if you are given the string "mama", you can change it to "m(am(a))" and treat the letters m as the m-functions to obtain the string "bc". Alternatively, you can change the same string to "m(am)a" and treat only the first letter m as a function to obtain the string "bna". Note that you can't treat m as a function with an empty argument. That is, you can't obtain the string "y" from "my".

What is the lexicographically maximal string that can be obtained from the given string and in how many ways can this maximal string be obtained? As the number of ways can be large, print it modulo 998 244 353.

Input

The only line of the input contains a string s containing only lowercase Latin letters ($1 \le |s| \le 512$).

Output

Print a string and an integer separated by a space — the answer to the problem.

Examples

standard input	standard output
icpc	icpc 1
mma	nb 1
mmyx	nzy 1