Problem D
Nested Repetition Compression

Time Limit: 2 seconds

You have a number of strings of lowercase letters to be sent in e-mails, but some of them are so long that typing as they are would be tiresome. As you found repeated parts in them, you have decided to try out a simple compression method in which repeated sequences are enclosed in parentheses, prefixed with digits meaning the numbers of repetitions. For example, the string "`abababaaaaa`" can be represented as "`3(ab)5(a)`" or "`a3(ba)4(a)`". The syntax of compressed representations is given below in Backus-Naur form with the start symbol S.

$<S> ::= <R> \mid <R><S>$
$<R> ::= <L> \mid <D>$ `(` $<S>$ `)`
$<D> ::=$ `2` | `3` | `4` | `5` | `6` | `7` | `8` | `9`
$<L> ::=$ `a` | `b` | `c` | `d` | `e` | `f` | `g` | `h` | `i` | `j` | `k` | `l` | `m` | `n` | `o` | `p` | `q` | `r` | `s` | `t` | `u` | `v` | `w` | `x` | `y` | `z`

Note that numbers of repetitions are specified by a single digit, and thus at most nine, but more repetitions can be specified by nesting them. A string of thirty `a`'s can be represented as "`6(5(a))`" or "`3(5(2(a)))`", for example.

Find the shortest possible representation of the given string in this compression scheme.

Input

The input is a line containing a string of lowercase letters. The number of letters in the string is at least one and at most 200.

Output

Output a single line containing the shortest possible representation of the input string. If there exist two or more shortest representations, any of them is acceptable.

Sample Input 1	**Sample Output 1**
`abababaaaaa`	`3(ab)5(a)`

Sample Input 2	**Sample Output 2**
`abababcaaaaaababababcaaaaa`	`2(3(ab)c5(a))`

Sample Input 3	**Sample Output 3**
`abcdefg`	`abcdefg`