PROBLEM A: DERIVATIVE

Input file: standard input

Output file: standard output

Problem

Using the following grammar:

<expression> ::= <component> | <component> + <expression>
<component> ::= <factor> | <factor> * <component>
<factor> ::= <positive integer> | <argument> | (<expression>)
<argument> ::= X

write a program which analyses expressions conforming to the rules of this grammar and evaluates their derivatives for a given value of the argument, if the analysis has been successfully completed.
It may be assumed that there is no overflow of float(C)/real(Pascal) numbers range.

Input

Expression given as a character string (max 250).
Value of the argument given as an integer number.

Output

Value of the expression or output message ERROR if the expression does not follow the grammar.

Example

X	IN	OUT
3	32	0
3	12+X	1
3	X*X+3	6
3	X*X*X+3	27
3	1(2+3)+3	ERROR
3	qwe323	ERROR