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Hexadecimal Calculation

In this problem, you will be given an expression with hexadecimal number, and you need to calculate the result of this expression in hexadecimal.

For simplicity, here we will consider only the two basic operations, sum and multiply (+ *). Also, expressions can be grouped with parenthesis. You should consider the precedence of operations, with multiplication and division first, then addition and subtraction.

Also, the integer numbers are in single digit only(0 to F). A to F must be in upper case.

Input

The input consists of multiple test cases, each case consist of an line of expression. The length of express is less than 100. The input is terminated by EOF.

Output

Output the result of the expression in hexadecimal. The result and the intermediate step will not over 32-bits signed integer.

Sample Input

```
1+1
1+1*2
(1+1)*2
1+(9)
```

Output for Sample Input

```
2
3
4
A
```