Problem B
A very easy problem I

Time limit: **3 seconds**
Memory limit: **1024 megabytes**

Problem Description

Himmel is a brave who likes to explore. One day, while he was exploring a ruin, he came across a sealed door and a stone tablet beside it. The inscription read:

There's a very cool function $f(x, y) = x^3 + 2x^2 - 3x - 1 + y^3 - y^2 + 4y$. The argument x may be integer or another function f, and argument y must be integer.

Give you several expressions made up of the function and integers. Solve their values separately. As long as you can solve them all within the time limit, the seal shall be broken.

To complete the task in time and lift the seal, Himmel decided to rely on the power of computers. However, since he couldn't program himself, he went to the town and found a programmer who thinks this problem is so easy that it can be solved in no time. And that programmer was you!

To make the problem easier, the expression Himmel gives you wouldn't contain parentheses or commas. For example, he may give you the expression "`f f 2 3 5`", it's equivalent to "$f(f(2, 3), 5)$".

For "`f f 2 3 5`", it's equivalent to $f(f(2, 3), 5)$. The result of $f(2, 3)$ is $2^3 + 2 \times 2^2 - 3 \times 2 - 1 + 3^3 - 3^2 + 4 \times 3 = 39$, so the function can be rewritten as $f(39, 5)$. The result of $f(39, 5)$ is $39^3 + 2 \times 39^2 - 3 \times 39 - 1 + 5^3 - 5^2 + 4 \times 5 = 62363$.

For another example "`f 3 3`", it's equivalent to $f(3, 3)$. The result of $f(3, 3)$ is $3^3 + 2 \times 3^2 - 3 \times 3 - 1 + 3^3 - 3^2 + 4 \times 3 = 65$.

Now, write a program to help Himmel complete his mission.

Input Format

Your program is to read from standard input. The input consists of T test cases. The number of test cases T is given in the first line of the input. Each test case contains an expression E.

Output Format

Your program is to write to standard output. Print exactly one line for each test case. The line contains an integer, which is the result of the evaluated expression. Please see the sample output.

Technical Specification

- $1 \leq T \leq 25$
- It's guaranteed that the expression E consists only of 32-bits integer numbers (which may be negative) and the function symbols '`f`'.

- The format of each expression is guaranteed to be syntactically valid.

Sample Input 1

```
2
f f 2 3 5
f 3 3
```

Sample Output 1

```
62363
65
```