Problem H
Out of Power

Time limit: 1 second
Memory limit: 2048 megabytes

Problem Description

In the campus of National Yang Ming Chiao Tung University (NYCU), a sudden power outage has occurred, plunging the entire campus into darkness. Students and faculty members find themselves bewildered and unsettled in this blackout, while the normal operations of the campus suffer severe disruption. To address this unexpected situation, the university decides to host an event called the "Power Restoration Competition" to challenge the intellect and skills of its students.

In this competition, students will be tasked with implementing a special quaternary operator using the concept of the spaceship operator in C++20 to assist in restoring power to the campus. The format of this quaternary operator is as follows:

```
(A <=> B) ? (value1) : (value2) : (value3)
```

Its functionality is defined as follows:

- If A under modulo $10^9+7 < B$ under modulo 10^9+7, return `value1`;
- If A under modulo $10^9+7 = B$ under modulo 10^9+7, return `value2`;
- If A under modulo $10^9+7 > B$ under modulo 10^9+7, return `value3`.

This quaternary operator will serve as a crucial tool in restoring power to the campus. Only by passing this challenge can students aid the university in resolving the power outage issue and restoring normal operations to the campus. Are you ready to take on this challenge?

Input Format

The input consists of one or more lines representing expressions. Each line contains a single expression.

- Integer Expression: An integer expression is represented as a non-negative integer value within the range of a 32-bit unsigned integer.
- Addition Expression: An addition expression is represented as two integer expressions separated by the + operator.
- Multiplication Expression: A multiplication expression is represented as two integer expressions separated by the * operator.
- Comparison Expression: A comparison expression is represented as a ternary operation of the form `(expr1 <=> expr2) ? (expr3) : (expr4) : (expr5)`. Each `expr` can be an

integer, addition expression, multiplication expression, or another comparison expression. The result is evaluated based on the comparison result of `expr1` and `expr2`.

In the evaluation of any `expr`, addition operations are performed before multiplication operations. For example, $5 * 2 + 3 = 5 * 5 = 25$

Output Format

The output should contain one line, the value of the expression modulo $10^9 + 7$.

Technical Specification

- The input number is guaranteed to be within a 32-bit unsigned integer.
- Expressions consist of the following characters: `( ) <=> : ? + *` and integers.
- The input expression is guaranteed to be grammatically correct.
- The number of tokens does not exceed 10^5.

Sample Input 1

```
( 4 + 3 <=> 1 * 3 ) ? ( 5 ) : ( 12 ) : ( 3 + 2 * 6 ) + 4 * 3
```

Sample Output 1

```
102
```

Sample Input 2

```
( 3 <=> 3 + 3 ) ? ( ( 5 <=> 2 + 3 ) ? ( 2 ) : ( 1 + 1 ) : ( 5 ) + 3 * 2 ) : ( 3
   ) : ( 1 )
```

Sample Output 2

```
10
```

Note

Here are some useful pieces of information related to modulo:

1. For two positive integers A and B with modulus M, (A + B) mod M = ((A mod M) + (B mod M)) mod M
2. For two positive integers A and B with modulus M, (A * B) mod M = ((A mod M) * (B mod M)) mod M