Basic Equation Solving

Input file:	`standard input`
Output file:	`standard output`
Time limit:	8 seconds
Memory limit:	1024 megabytes

Bobo recently saw some constraints in the form of $X\,op\,Y$ where X and Y are strings consisting of digits from 0 to 9 and uppercase English letters, denoting the decimal representation of a number and $op \in \{<, >, =\}$ denotes the operator. A solution to such a constraint is an assignment of $0-9$ to each of the 26 uppercase English letters, such that all constraints are satisfied. **Here, leading zeroes are allowed.**

For example, suppose the constraint is P = NP. Then, the set of solutions satisfying this constraint is all assignments with $N = 0$. Another example is the constraint 2000CNY > 3000USD. Here, no assignments can satisfy this constraint since 2000CNY is a 7-digit decimal integer less than 3×10^6, and 3000USD is a 7-digit decimal integer greater than or equal to 3×10^6.

Now Bobo has received a system of n constraints, and he wonders how many assignments of $0-9$ to each of the 26 uppercase English letters are there, such that all constraints are satisfied. Since the answer might be too large, you need to output the answer modulo 998 244 353 (a prime number).

Input

The first line of input contains one integer n ($0 \le n \le 10$), denoting the number of constraints.

Then, n lines follow. Each line contains a constraint in the form of $X\,op\,Y$, where X and Y are strings consisting of digits from 0 to 9 and uppercase English letters and $op \in \{<, >, =\}$.

It is guaranteed that the sum of lengths over all constraints does not exceed 50.

Output

Output one integer in a line, denoting the number of solutions to the given system of constraints, taken modulo 998 244 353.

Examples

standard input	standard output
1 P=NP	766136394
1 2000CNY>3000USD	0
4 AB>CD E<A BC>FF EF>F1	23645065

Note

As already discussed in the statement, the constraint P = NP has 10^{25} solutions, which is 766136394 after taken modulo 998 244 353, and 2000CNY > 3000USD has zero solutions.