Meow Logic

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

Meow was talking to the Miau.

"If the weather today is sunny, then I will go to the beach."
"I go to the beach"
"In conclusion, today is sunny"

Miau spots that the arguments are invalid.

Denote p = "Weather is sunny", q = "go to the beach",

The premises,

$p \to q$, (meaning if p is true then q is true, or formally this is known as p implies q)

q, (meaning q is true)

lead to a conclusion

p.

is **not always true** (Counterexample: When $p = 0$, $q = 1$).

Today Miau is having a fever, he can't determine that whether the arguments are valid. So, he needs your help to determine whether the argument is valid or not.

An argument is valid if and only if the conjunction of all premises implies a conclusion is a tautology.

In other words, an argument of N premises denoted as $p_1, p_2, \dots, p_n$ and a conclusion c is valid if and only if

$$(p_1 \& p_2 \& \dots \& p_n) \to c$$

is always true.

The meaning of the symbols and the truth tables of logical operators used in the input are as follows:

- p,q,r,s and t are logical variables (operands) that may take on value 0 (false) or 1 (true).
- &,|,>,! and = are logical operators that mean *and*, *or*, *implies*, *not*, *equal*.

Definition of logical operators

p	q	$\&pq$	$\|pq$	$> pq$	$!p$	$= pq$
1	1	1	1	1	0	1
1	0	0	1	0	0	0
0	1	0	1	1	1	0
0	0	0	0	1	1	1

** **The statement given is in a prefix expression.**

Note:

p implies q is equivalence to NOT p OR q ($p \to q \equiv !p \lor q$)

Argument are a set of statements that have the form: if p_1 AND p_2 AND ... AND p_n, then c. In logical expression, p_1 AND p_2 AND ... AND p_n, are premises and c is conclusion. Arguments are said to be valid if p_1 AND p_2 AND ... AND p_n is true, then c must also be true. If there is any case where p_1 AND p_2 AND ... AND p_n is true, but c is false, then the argument is invalid.

An expression is called a prefix expression if the operator appears before the operands in the expression which is the form ($operator\ operand_1\ operand_2$) For example, the expression $1 + 2$ (which is known as infix expression/most common form of expression we used in daily life) in prefix expression are $+12$. Some more examples, the expression $1 + 2 \times 3 + 4$ in prefix expression are $+ + 1 \times 2\,3\,4$ while the expression $(1+2) \times (3+4)$ in prefix expression are $\times + 1\,2 + 3\,4$ (note the difference in prefix expression when there is bracket as in prefix expression have already accounted for the bracket). Note that changing an infix expression into a prefix (or postfix) expression is for simplicity and ease in evaluating an expression in most digital calculators nowadays.

Input

The first line contains an integer N ($1 \leq N \leq 10^5$) — the number of premises.

The next N lines each contain a string — the premises of the arguments in which each statement in the argument is a valid prefix expression that contains the characters “$pqrst\&| >! =$” only (The length of premises at most 10^5 characters).

The last line contains a string — the conclusion of the arguments in which each statement in the argument is a valid prefix expression that contains the characters “$pqrst\&| >! =$” only (The length of conclusion at most 10^5 characters).

The sum of the length of all the premises is guaranteed at most 10^5.

Output

Output “Yes” (without the double quote) if the argument is valid and “No” (without the double quote) if the argument is invalid.

Examples

<table>
<tr><th>standard input</th><th>standard output</th></tr>
<tr><td>2
>pq
p
q</td><td>Yes</td></tr>
<tr><td>2
>pq
q
p</td><td>No</td></tr>
<tr><td>3
|&&&pqrst
===pqrs
t
p</td><td>No</td></tr>
</table>

Note

In the first example, the first premise, $p \to q$ is the infix expression for $> pq$, which is also known as If p then q, and the second premise is p is true. Therefore, the conclusion that q is true is correct. This rule of inference is known as Modus Ponens.

In the second example, the argument is invalid. There is a counterexample, when $p = 0$ and $q = 1$, $p \to q$ is said to be vacuously true and q is true. However, the conclusion p is actually false. Therefore, the argument is invalid.

In the third example, the argument is invalid. The infix expression of premises are $(p\&q\&r\&s)|t,\ p == q == r == s,\ t$. There is a counterexample, which is $p = 0,\ q = 0,\ r = 0,\ s = 0,\ t = 1$.