Moving Elevator

For given integers n and k we define that elevator moves as follows. There are n floors numbered from 1 to n. The elevator starts at floor 1. At any time, it can go up or down. Also, at any time, people can enter or exit the elevator. A valid elevator movement is a sequence of these events such that:

- elevator never goes below the first floor
- elevator never goes above the n-th floor
- the number of people in the elevator is always non-negative and never exceeds k
- elevator ends the movement at the first floor and there are no people in the elevator

all events are given as a string of an even length. Let this string be s, then the i-th event is denoted by consecutive characters $s[2 \cdot i]$ and $s[2 \cdot i + 1]$. More specifically, events are denoted as:

- `+x` := elevator moves x floors up
- `-x` := elevator moves x floors down
- `<x` := x people enter the elevator
- `>x` := x people exit the elevator

For example, a sequence `<2+2-1>1` denotes the following consecutive events:

1. two people enter the elevator
2. elevator moves 2 floors up
3. elevator moves 1 floor down
4. one person exit the elevator

Note: Each test file contains several queries which will test your regular expression. Let s be any of these queries and $s[i]$ be the i-th character of s. You can assume that every given s is in a correct format, which means that each of its characters $s[0], s[2], \ldots$ is in $\{+, -, >, <\}$, while each of characters $s[1], s[3], \ldots$ is a **positive** digit.

The task is to complete the function `getRegex(n, k)` defined in the code stub.

Input Format

Your code must not read any input. The input has to be read by the provided code stub. Any code breaking that rule will be disqualified.

The input format is the following. In the first line, there are two space-separated integers n and k. In the next line, there is a single integer m denoting the number of queries to answer. Then m lines follow. The i-th of them contains a string s_i, which corresponds to the i-th query and it is read by the locked stub.

Constraints

- $1 \leq n \leq 3$
- $1 \leq k \leq 2$
- $1 \leq m \leq 5$
- $2 \leq |s_i| \leq 200$
- $|s_i|$ is even for all i
- each s_i is given in a correct format described in the statement

Output Format

Your code must not produce any output. The output will be produced by the provided code stub. Any code breaking that rule will be disqualified. It will contain m lines, where the i-th of these lines contains the answer to the i-th query.

Sample Input 0

```
2 1
4
<1+1>1-1
+1+1<1+1
<1-1
+1-1-1
```

Sample Output 0

```
YES
NO
NO
NO
```

Explanation 0

There are n = 2 floors and the maximum number of people in the elevator at any time is k = 1.

In the 1st query, one person gets into the elevator on the 1st floor. Then, it moves to the 2nd floor, and the person gets out. It then proceeds to the 1st floor. This is valid, and therefore the answer is YES.

In the 2nd query, the elevator goes two floors up, one person gets in, and it goes up one floor again. This is invalid since the elevator goes to 3rd floor from 1st floor and n =2. Therefore, the answer is NO.

In the 3rd query, one person gets in, and the elevator goes one floor below the 1st floor. Therefore, this is invalid, and the answer is NO.

In the 4th query, the elevator goes up one floor and then goes two floors down. This is invalid since the elevator cannot go below the 1st floor. Therefore, the answer is NO.

Sample Input 1

```
3 2
3
<1+1-1
<1>1+1
+2<2-1-1>1>1
```

Sample Output 1

```
NO
NO
YES
```

Explanation 1

There are n = 3 floors, and the maximum number of people in the elevator is k = 2.

In the 1st query, one person gets in, it goes to the 2nd floor, and then it comes back to the 1st floor. This is invalid since the elevator has one person when it ends the journey in the 1st floor. Therefore, the answer is NO.

In the 2nd query, one person gets in, then he/she gets out and then the elevator goes to the 2nd floor. This is invalid since the elevator does not end on the 1st floor. Therefore, the answer is NO.

In the 3rd query, the elevator goes up two floors; two people get in, then it goes down one floor at a time to the 1st floor, and then the two persons get out on the 1st floor. This is valid since all conditions are satisfied. Therefore, the answer is YES.