

## 12781 Alternation Formulae

For a positive integer  $n$ , let  $S(n)$  be the string defined by the concatenation of the decimal notations (without leading zeroes!) of  $1, 2, \dots, n$ . For instance,  $S(11) = 1234567891011$ .

An (arithmetic) formula  $F$  is an  $n$ -alternation if it is built inserting in the string  $S(n)$  arithmetic operators  $+$ ,  $-$  and parentheses  $(, )$ . Besides of that, it is required that the used arithmetic operators occur alternately in  $F$ .

An  $n$ -alternation, being an arithmetic formula, has an integer value. The following are two examples of 11-alternations with the indicated values:

$$\begin{aligned} 1 - (2 + 3) - 4 + 5 - 6 + 7 - 8 + 9 - 1 + 0 - 11 &= -13 \\ -1 + 2 - 3 + 4 - 5 + 6 - 7 + 89 - 1 + 011 &= 95 \end{aligned}$$

Let's consider the following puzzle: given two integers  $n$  and  $m$  ( $n > 0$ ), decide if there exists an  $n$ -alternation  $F$  that evaluates to  $m$ . From the examples above it is clear that it is possible to build 11-alternations that evaluate to  $-13$  and  $95$ . However, it is easy to see that it is impossible to find a 3-alternation that evaluates to  $10$ .

In order to be precise in the description of the required task, an (arithmetic) *formula* is defined as follows:

- The empty string is not a formula.
- A numeric string, i.e., a string made of digits  $0 \dots 9$ , with at most 5 of them, is a formula.
- If  $\alpha$  and  $\beta$  are formulae, then  $\alpha + \beta$  and  $\alpha - \beta$  are formulae.
- If  $\alpha$  is a formula, then  $+\alpha$ ,  $-\alpha$  and  $(\alpha)$  are formulae.

### Input

The input consists of several test cases, each one defined by a line containing two blank-separated integers  $n$  and  $m$  ( $1 \leq n \leq 100$ ,  $-10^7 \leq m \leq 10^7$ ).

### Output

For each test case, print a line with the character 'Y' if there exists an  $n$ -alternation  $F$  that evaluates to  $m$ , or with the character 'N', otherwise.

### Sample Input

```
11 -13
11 95
3 10
```

### Sample Output

```
Y
Y
N
```