DMOPC '19 Contest 4 P1 - Valid Strings

Time limit: 2.0s   **Memory limit:** 64M

Veshy is entering strings into his calculator consisting of only `(`, `)`, and decimal digits; however, some strings are invalid and produce an error.

A valid string must either be:

1. Nothing (an empty string).
2. A non-negative integer expressed in decimal digits (e.g. `5`, `230`, `0032`), optionally followed by another valid string.
3. A pair of brackets enclosing a valid string (e.g. `(5)`), also optionally followed by another valid string.

Examples of valid strings:
`(1)(2)`, `((1))(2)`, `1(2)`, `(500())`

Examples of invalid strings:
`(12`, `(1))`, `((1)()`

You are given N strings. For each string, $s_1, s_2, \ldots, s_N$, output on the ith line, the validity of the ith string. If the string is valid, output `YES`. If the string is invalid, output `NO`. The length in characters of each string, s_i, is guaranteed to be in the range $[1, 1000]$.

Constraints

In all tests,
$1 \le N \le 100$

Input Specification

The first line contains one number, N.
The following N lines each contain one string s_i.

Output Specification

Output the validity of the ith string on the ith line.

Sample Input

```
7
1(2)
(1)(2)
((1))(2)
(500())
(12
(1))
((1)()
```

Sample Output

```
YES
YES
YES
YES
NO
NO
NO
```