A Simple Grammar

Timelimit: 2 sec

Problem description

You are given the following simple context-free grammar:

$$S \to SS,\ S \to (S),\ S \to [S],\ S \to a \mid b \mid c$$

Write a program that finds out if a word can be generated by this grammar.

Input

A number n ($1 \leq n \leq 10000$) followed by n lines containing n non-empty words over the alphabet $\{(,), [,], a, \ldots, z\}$. The total length of all words does not exceed $2 \cdot 10^7$.

Output

Answer in n lines. The ith line must contain `YES` if the ith word belongs to the language of the grammar and `NO` otherwise.

Sample input/output

Input	Output
7 a (a] a()b a[bc)a a[[[aa]a]] a[a]) (x)	 YES NO NO NO YES NO NO