

Problem B. Balanced Brackets

OS Linux

A bracket is considered to be any one of the following characters: (,) , { , } , [, or] .

Two brackets are considered to be a *matched pair* if the an opening bracket (i.e., (, [, or {) occurs to the left of a closing bracket (i.e.,) ,] , or }) of the exact same type. There are three types of matched pairs of brackets: [] , { } , and () .

A matching pair of brackets is *not balanced* if the set of brackets it encloses are not matched. For example, {[(())]} is not balanced because the contents in between { and } are not balanced. The pair of square brackets encloses a single, unbalanced opening bracket, (, and the pair of parentheses encloses a single, unbalanced closing square bracket,] .

By this logic, we say a sequence of brackets is *balanced* if the following conditions are met:

- It contains no unmatched brackets.
- The subset of brackets enclosed within the confines of a matched pair of brackets is also a matched pair of brackets.

Given n strings of brackets, determine whether each sequence of brackets is balanced. If a string is balanced, return YES . Otherwise, return NO .

Function Description

Complete the function *isBalanced* in the editor below.

isBalanced has the following parameter(s):

- *string s*: a string of brackets

Returns

- *string*: either YES or NO

Input Format

The first line contains a single integer n , the number of strings.

Each of the next n lines contains a single string s , a sequence of brackets.

Constraints

- $1 \leq n \leq 10^3$

- $1 \leq |s| \leq 10^3$, where $|s|$ is the length of the sequence.
- All characters in the sequences $\in \{ \{, \}, (,), [,] \}$.

Output Format

For each string, return YES or NO.

Input	Output
STDIN	Function
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3	n = 3
{[()]}	first s = '{[()]}'
{[()]}	second s = '{[()]}'
{[[[(()]]]}}	third s ='{{[[(()]]]}}'

Explanation

1. The string {[()]} meets both criteria for being a balanced string.
2. The string {[()]} is not balanced because the brackets enclosed by the matched pair { and } are not balanced: [()].
3. The string {{[[(()]]]}} meets both criteria for being a balanced string.