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Stacks: Balanced Brackets

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Problem

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Check out the resources on the page's right side to learn more about stacks. The video tutorial is by Gayle Laakmann McDowell, author of the best-selling interview book [Cracking the Coding Interview](#).

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 considered to be *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, print YES on a new line; otherwise, print NO on a new line.

Input Format

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

Each line i of the n subsequent lines consists of a single string, s , denoting a sequence of brackets.

Constraints

- $1 \leq n \leq 10^3$
- $1 \leq \text{length}(s) \leq 10^3$, where $\text{length}(s)$ is the length of the sequence.
- Each character in the sequence will be a bracket (i.e., { , } , (,) , [, and]).

Output Format

For each string, print whether or not the string of brackets is balanced on a new line. If the brackets are *balanced*, print YES ; otherwise, print NO .

Sample Input

```
3
{[()]}
{[(())]}
{[[[()]]]}
```

Sample Output

```
YES
NO
YES
```

Explanation

1. The string `{[()]}` meets both criteria for being a balanced string, so we print `YES` on a new line.
2. The string `{[(())]}` is not balanced, because the brackets enclosed by the matched pairs `[]` and `()` are not balanced. Thus, we print `NO` on a new line.
3. The string `{{[[(())]}}` meets both criteria for being a balanced string, so we print `YES` on a new line.

[f](#) [t](#) [in](#)

Submissions: 25191

Max Score: 30



Difficulty: Medium

Rate This Challenge:

☆☆☆☆☆

Need Help?

5:46

[Stacks](#)[More](#)Current Buffer (saved locally, editable)  Python 2 

```
1 def is_matched(expression):
2     pass
3
4 t = int(raw_input().strip())
5 for a0 in xrange(t):
6     expression = raw_input().strip()
7     if is_matched(expression) == True:
8         print "YES"
9     else:
10        print "NO"
11
```

Line: 1 Col: 1

 Upload Code as File☐ Test against custom input

Run Code

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