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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.

3. The string `{[[[()]]]}` meets both criteria for being a balanced string, so we print `YES` on a new line.

f t in

Submissions: 12705

Max Score: 30

Difficulty: Medium

Rate This Challenge:

☆☆☆☆☆

Need Help?

5:46



Stacks

More

Current Buffer (saved locally, editable)

C#



```
1 using System;
2 using System.Collections.Generic;
3 using System.IO;
4 using System.Linq;
5 class Solution {
6
7     static bool evaluarExpresion(string expresion)
8     {
9         List<char> abiertos = new List<char>(new char[] { '(', '[', '{' });
10        List<char> cerrados = new List<char>(new char[] { ')', ']', '}' });
11
12        Stack<char> pila = new Stack<char>();
13        bool balanceado = true;
14        for (int i = 0; i < expresion.Length && balanceado; i++)
15        {
16            char actual = expresion[i];
17            if (abiertos.Contains(actual))
18            {
19                pila.Push(actual);
20            }
21            else
22            {
23                balanceado = (pila.Count > 0)
24                    && cerrados.IndexOf(actual) == abiertos.IndexOf(pila.Pop());
25            }
26        }
27        return balanceado && (pila.Count == 0);
28    }
29
30
31    static void Main(String[] args) {
32        int t = Convert.ToInt32(Console.ReadLine());
33        for(int a0 = 0; a0 < t; a0++){
34            string expresion = Console.ReadLine();
35            Console.WriteLine(evaluarExpresion(expresion) ? "YES" : "NO");
36        }
37    }
38 }
39
```

Line: 35 Col: 76

Upload Code as File ☐ Test against custom input

Run Code

Submit Code

Congrats, you solved this challenge!

✓ Test Case #0
✓ Test Case #3
✓ Test Case #6
✓ Test Case #9
✓ Test Case #12
✓ Test Case #15
✓ Test Case #18

✓ Test Case #1
✓ Test Case #4
✓ Test Case #7
✓ Test Case #10
✓ Test Case #13
✓ Test Case #16

✓ Test Case #2
✓ Test Case #5
✓ Test Case #8
✓ Test Case #11
✓ Test Case #14
✓ Test Case #17

Next Challenge



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