Balanced Brackets

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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

- $1 \leq n \leq 10^3$
- $1 \leq len_s \leq 10^3$, where len_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.
3. The string `{{[[(())]]}}` meets both criteria for being a balanced string, so we print `YES` on a new line.

Submissions:35559

Max Score:25

Difficulty: Medium

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Current Buffer (saved locally, editable) C++

```cpp
#include <bits/stdc++.h>

using namespace std;

string isBalanced(string s) {
    // Complete this function
}

int main() {
    int t;
    cin >> t;
    for(int a0 = 0; a0 < t; a0++){
        string s;
        cin >> s;
        string result = isBalanced(s);
        cout << result << endl;
    }
    return 0;
}

```

Line: 1 Col: 1

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