

Balanced Brackets

Problem Statements :

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.

Problem Source : <https://www.hackerrank.com/challenges/balanced-brackets/problem>

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 :

$1 < n < 10^3$

$2 < len_s < 10^3$ 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.

