Codility_

CodeCheck Report: trainingZJK38Z-UJ9

Test Name:

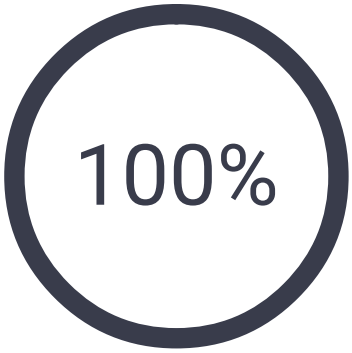
Check out Codility training tasks

Summary Timeline AI Assistant Transcript

Tasks summary

Task	Time spent	Score
Brackets C++	6 min	100%

Total score



Tasks Details

1. Brackets

Easy

Determine whether a given string of parentheses (multiple types) is properly nested.

Task Score	Correctness	Performance
100%	100%	100%

Task description

A string S consisting of N characters is considered to be *properly nested* if any of the following conditions is true:

- S is empty;
- S has the form "(U)" or "[U]" or "{U}" where U is a properly nested string;
- S has the form "VW" where V and W are properly nested strings.

For example, the string "{[()()]}" is properly nested but "([)()]" is not.

Write a function:

```
int solution(string &S);
```

that, given a string S consisting of N characters, returns 1 if S is properly nested and 0 otherwise.

For example, given S = "{[()()]}", the function should return 1 and given S = "([)()]", the function should return 0, as explained above.

Write an **efficient** algorithm for the following assumptions:

Solution

Programming language used:	C++
Total time used:	6 minutes
Effective time used:	6 minutes
Notes:	*not defined yet*

Task timeline

05:14:05 05:19:16

Code: 05:19:16 UTC, cpp, final, score: **100** show code in pop-up

```
1  // you can use includes, for example:
2  // #include <algorithm>
```

- N is an integer within the range [0..200,000];
- string S is made only of the following characters: '(', '{', '[', ']', '}' and/or ')'.


```cpp
#include <vector>

// you can write to stdout for debugging purpo
// cout << "this is a debug message" << endl;

int solution(string &S) {
    //stack
    vector<char> stack;
    int flag = 0;

    for (const char& e : S) {
        if (e == '(' || e == '{' || e == '[')
            stack.push_back(e);
        if (e == ')' || e == '}' || e == ']')
            if (stack.empty())
                return 0;
            if (stack.back() == '(' && e == ')
                flag = 1;
            if (stack.back() == '{' && e == '}
                flag = 1;
            if (stack.back() == '[' && e == ']
                flag = 1;

            if (flag == 1) {
                stack.pop_back();
                flag = 0;
            }
        }
    }

    if (stack.size() == 0)
        return 1;
    return 0;
}
```

Analysis summary

The solution obtained perfect score.

Analysis

Detected time complexity: **O(N)**

expand all	Example tests	
▶	example1 example test 1	✔ OK
▶	example2 example test 2	✔ OK
expand all	Correctness tests	
▶	negative_match invalid structures	✔ OK
▶	empty empty string	✔ OK
▶	simple_grouped simple grouped positive and negative test, length=22	✔ OK
expand all	Performance tests	
▶	large1 simple large positive test, 100K ('s followed by 100K)'s +)(	✔ OK
▶	large2 simple large negative test, 10K+1 ('s followed by 10K)'s +)(+ ()	✔ OK

▶	large_full_ternary_tree tree of the form T=(TTT) and depth 11, length=177K+	✔ OK
▶	multiple_full_binary_trees sequence of full trees of the form T=(TT), depths [1..10..1], with/without some brackets at the end, length=49K+	✔ OK
▶	broad_tree_with_deep_paths string of the form [TTT...T] of 300 T's, each T being '{{{...}}}' nested 200-fold, length=120K+	✔ OK