

Problem 3703: Remove K-Balanced Substrings

Problem Information

Difficulty: Medium

Acceptance Rate: 31.85%

Paid Only: No

Tags: String, Stack, Simulation

Problem Description

You are given a string `s` consisting of `(` and `)`, and an integer `k`.

A **string** is **k-balanced** if it is **exactly** `k` **consecutive** `(` followed by `k` **consecutive** `)`, i.e., `(` * k + `)` * k`.

For example, if `'k = 3'`, k-balanced is `"((()))"`.

You must **repeatedly** remove all **non-overlapping k-balanced substrings** from `s`, and then join the remaining parts. Continue this process until no k-balanced **substring** exists.

Return the final string after all possible removals.

****Example 1:****

****Input:**** s = "()", k = 1

****Output:**** ""

****Explanation:****

k-balanced substring is `"()`"

Step | Current `s` | `k-balanced` | Result `s` ---|---|---|--- 1 | `(`))` | `(~**()**~~)` | `()` 2 | `()` | ~~**`(`**~~ | Empty Thus, the final string is `""`.

Example 2:

****Input:**** s = "(()()", k = 1

****Output:** "((**

Explanation:

k-balanced substring is `"(())`

Step | Current `s` | `k-balanced` | Result `s` ---|---|--- 1 | `((())` | `(~**()**~` | `(((` 2 | `((` | - | `(` Thus, the final string is `""`.

****Example 3:****

****Input:**** s = "((()))()()", k = 3

****Output:** "()()()**

Explanation:

k-balanced substring is `"((()))"`

Step | Current `s` | `k-balanced` | Result `s` ---|---|---|--- 1 | `((())())()` | `~**((()))**~()()` | `()()(` 2 | `()()(` | - | `()()(` Thus, the final string is `"(())"`.

****Constraints:****

* `2 <= s.length <= 105` * `s` consists only of `(` and `)` . * `1 <= k <= s.length / 2`

Code Snippets

C++:

```
class Solution {
public:
    string removeSubstring(string s, int k) {
    }
}
```

```
};
```

Java:

```
class Solution {  
    public String removeSubstring(String s, int k) {  
        }  
        }  
}
```

Python3:

```
class Solution:  
    def removeSubstring(self, s: str, k: int) -> str:
```