

# 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:
```