

# Problem 2030: Smallest K-Length Subsequence With Occurrences of a Letter

## Problem Information

Difficulty: **Hard**

Acceptance Rate: 39.39%

Paid Only: No

Tags: String, Stack, Greedy, Monotonic Stack

## Problem Description

You are given a string `s`, an integer `k`, a letter `letter`, and an integer `repetition`.

Return the **lexicographically smallest** subsequence of `s` of length `k` that has the letter `letter` appear **at least** `repetition` times. The test cases are generated so that the `letter` appears in `s` **at least** `repetition` times.

A **subsequence** is a string that can be derived from another string by deleting some or no characters without changing the order of the remaining characters.

A string `a` is **lexicographically smaller** than a string `b` if in the first position where `a` and `b` differ, string `a` has a letter that appears earlier in the alphabet than the corresponding letter in `b`.

**Example 1:**

**Input:** `s = "leet", k = 3, letter = "e", repetition = 1` **Output:** `"eet"` **Explanation:** There are four subsequences of length 3 that have the letter 'e' appear at least 1 time: - "lee" (from `lee`) - "let" (from `lee`) - "let" (from `lee`) - "eet" (from `lee`) The lexicographically smallest subsequence among them is "eet".

**Example 2:**

[example-2](https://assets.leetcode.com/uploads/2021/09/13/smallest-k-length-subsequence.png)

**\*\*Input:\*\*** s = "leetcode", k = 4, letter = "e", repetition = 2 **\*\*Output:\*\*** "ecde" **\*\*Explanation:\*\*** "ecde" is the lexicographically smallest subsequence of length 4 that has the letter "e" appear at least 2 times.

**\*\*Example 3:\*\***

**\*\*Input:\*\*** s = "bb", k = 2, letter = "b", repetition = 2 **\*\*Output:\*\*** "bb" **\*\*Explanation:\*\*** "bb" is the only subsequence of length 2 that has the letter "b" appear at least 2 times.

**\*\*Constraints:\*\***

\* `1 <= repetition <= k <= s.length <= 5 \* 10^4` \* `s` consists of lowercase English letters. \* `letter` is a lowercase English letter, and appears in `s` at least `repetition` times.

## Code Snippets

### C++:

```
class Solution {
public:
    string smallestSubsequence(string s, int k, char letter, int repetition) {

    }
};
```

### Java:

```
class Solution {
    public String smallestSubsequence(String s, int k, char letter, int
    repetition) {

    }
}
```

### Python3:

```
class Solution:
    def smallestSubsequence(self, s: str, k: int, letter: str, repetition: int)
    -> str:
```