# Problem 3614: Process String with Special Operations II

## Problem Information

**Difficulty:** Hard
**Acceptance Rate:** 16.43%
**Paid Only:** No
**Tags:** String, Simulation

## Problem Description

You are given a string `s` consisting of lowercase English letters and the special characters: `'*'`, `'#'`, and `'%'`.

You are also given an integer `k`.

Build a new string `result` by processing `s` according to the following rules from left to right:

* If the letter is a **lowercase** English letter append it to `result`. * A `'*'` **removes** the last character from `result`, if it exists. * A `'#'` **duplicates** the current `result` and **appends** it to itself. * A `'%'` **reverses** the current `result`.

Return the `kth` character of the final string `result`. If `k` is out of the bounds of `result`, return `'.'`.

**Example 1:**

**Input:** s = "a#b%*", k = 1

**Output:** "a"

**Explanation:**

`i` | `s[i]` | Operation | Current `result` ---|---|---|--- 0 | `'a'` | Append `'a'` | `"a"` 1 | `'#'` | Duplicate `result` | `"aa"` 2 | `'b'` | Append `'b'` | `"aab"` 3 | `'%'` | Reverse `result` | `"baa"` 4 |

`'*'` | Remove the last character | `"ba"` The final `result` is `"ba"`. The character at index `k = 1` is `'a'`.

**Example 2:**

**Input:** s = "cd%#*#", k = 3

**Output:** "d"

**Explanation:**

`i` | `s[i]` | Operation | Current `result` ---|---|---|--- 0 | `'c'` | Append `'c'` | `"c"` 1 | `'d'` | Append `'d'` | `"cd"` 2 | `'%'` | Reverse `result` | `"dc"` 3 | `'#'` | Duplicate `result` | `"dcdc"` 4 | `'*'` | Remove the last character | `"dcd"` 5 | `'#'` | Duplicate `result` | `"dcddcd"` The final `result` is `"dcddcd"`. The character at index `k = 3` is `'d'`.

**Example 3:**

**Input:** s = "z*#", k = 0

**Output:** "."

**Explanation:**

`i` | `s[i]` | Operation | Current `result` ---|---|---|--- 0 | `'z'` | Append `'z'` | `"z"` 1 | `'*'` | Remove the last character | `""` 2 | `'#'` | Duplicate the string | `""` The final `result` is `""`. Since index `k = 0` is out of bounds, the output is `'.'`.

**Constraints:**

* `1 <= s.length <= 105` * `s` consists of only lowercase English letters and special characters `'*'`, `'#'`, and `'%'`. * `0 <= k <= 1015` * The length of `result` after processing `s` will not exceed `1015`.

## Code Snippets

**C++:**

```
class Solution {
public:
char processStr(string s, long long k) {

}
};
```

**Java:**

```
class Solution {
public char processStr(String s, long k) {

}
}
```

**Python3:**

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