

## 884. Decoded String at Index

An encoded string `S` is given. To find and write the *decoded* string to a tape, the encoded string is read **one character at a time** and the following steps are taken:

- If the character read is a letter, that letter is written onto the tape.
- If the character read is a digit (say `d`), the entire current tape is repeatedly written `d-1` more times in total.

Now for some encoded string `S`, and an index `K`, find and return the `K`-th letter (1 indexed) in the decoded string.

### Example 1:

**Input:** `S = "leet2code3", K = 10`

**Output:** `"o"`

**Explanation:**

The decoded string is `"leetleetcodeleetleetcodeleetleetcode"`.

The 10th letter in the string is `"o"`.

### Example 2:

**Input:** `S = "ha22", K = 5`

**Output:** `"h"`

**Explanation:**

The decoded string is `"hahahaha"`. The 5th letter is `"h"`.

### Example 3:

**Input:** `S = "a2345678999999999999999999", K = 1`

**Output:** `"a"`

**Explanation:**

The decoded string is `"a"` repeated 8301530446056247680 times. The 1st letter is `"a"`.

### Note:

1. `2 <= S.length <= 100`
2. `S` will only contain lowercase letters and digits `2` through `9`.
3. `S` starts with a letter.
4. `1 <= K <= 10^9`
5. The decoded string is guaranteed to have less than `2^63` letters.