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 = "a2345678999999999999999", 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.