

## The k-th Lexicographical String of All Happy Strings of Length n

A **happy string** is a string that:

- consists only of letters of the set ['a', 'b', 'c'].
- $s[i] \neq s[i + 1]$  for all values of  $i$  from 1 to  $s.length - 1$  (string is 1-indexed).

For example, strings "**abc**", "**ac**", "**b**" and "**abcbabcbcb**" are all happy strings and strings "**aa**", "**baa**" and "**ababbc**" are not happy strings.

Given two integers  $n$  and  $k$ , consider a list of all happy strings of length  $n$  sorted in lexicographical order.

Return *the kth string* of this list or return an **empty string** if there are less than  $k$  happy strings of length  $n$ .

**Example 1:**

**Input:**  $n = 1, k = 3$

**Output:** "c"

**Explanation:** The list ["a", "b", "c"] contains all happy strings of length 1. The third string is "c".

**Example 2:**

**Input:**  $n = 1, k = 4$

**Output:** ""

**Explanation:** There are only 3 happy strings of length 1.

**Example 3:**

**Input:**  $n = 3, k = 9$

**Output:** "cab"

**Explanation:** There are 12 different happy string of length 3 ["aba", "abc", "aca", "acb", "bab", "bac", "bca", "bcb", "cab", "cac", "cba", "cbc"]. You will find the 9<sup>th</sup> string = "cab"

**Constraints:**

- $1 \leq n \leq 10$
- $1 \leq k \leq 100$