

# 1415. 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] != 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 9th string = `"cab"`

## Example 4:

Input: `n = 2, k = 7`

Output: `""`

### Example 5:

Input:  $n = 10$ ,  $k = 100$

Output: "abacbabacb"

### Constraints:

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

```
def getHappyString(self, n: int, k: int) -> str:
    if n==1 and k<4:
        return ['a','b','c'][k-1]
    ans = []
    ssf = ''
    self.solver(ans,ssf,n,k)
    return ans[k-1] if len(ans)>=k else ""

def solver(self,ans,ssf,n,k):
    if n==0:
        ans.append(ssf)
        return
    for ele in ['a','b','c']:
        if len(ssf) != 0:
            if ssf[-1]!=ele:
                self.solver(ans, ssf + ele, n - 1, k)
        else:
            self.solver(ans,ele,n-1,k)
```