Problem 779: K-th Symbol in Grammar

Problem Information

Difficulty: Medium
Acceptance Rate: 47.85%
Paid Only: No
Tags: Math, Bit Manipulation, Recursion

Problem Description

We build a table of `n` rows (**1-indexed**). We start by writing `0` in the `1st` row. Now in every subsequent row, we look at the previous row and replace each occurrence of `0` with `01`, and each occurrence of `1` with `10`.

* For example, for `n = 3`, the `1st` row is `0`, the `2nd` row is `01`, and the `3rd` row is `0110`.

Given two integer `n` and `k`, return the `kth` (**1-indexed**) symbol in the `nth` row of a table of `n` rows.

Example 1:

Input: n = 1, k = 1 **Output:** 0 **Explanation:** row 1: _0_

Example 2:

Input: n = 2, k = 1 **Output:** 0 **Explanation:** row 1: 0 row 2: _0_ 1

Example 3:

Input: n = 2, k = 2 **Output:** 1 **Explanation:** row 1: 0 row 2: 0 _1_

Constraints:

* `1 <= n <= 30` * `1 <= k <= 2n - 1`

Code Snippets

C++:

```
class Solution {
public:
int kthGrammar(int n, int k) {

}
};
```

Java:

```
class Solution {
public int kthGrammar(int n, int k) {

}
}
```

Python3:

```
class Solution:
def kthGrammar(self, n: int, k: int) -> int:
```