Problem 3304: Find the K-th Character in String Game I

Problem Information

Difficulty: Easy
Acceptance Rate: 81.70%
Paid Only: No
Tags: Math, Bit Manipulation, Recursion, Simulation

Problem Description

Alice and Bob are playing a game. Initially, Alice has a string `word = "a"`.

You are given a **positive** integer `k`.

Now Bob will ask Alice to perform the following operation **forever** :

* Generate a new string by **changing** each character in `word` to its **next** character in the English alphabet, and **append** it to the _original_ `word`.

For example, performing the operation on `"c"` generates `"cd"` and performing the operation on `"zb"` generates `"zbac"`.

Return the value of the `kth` character in `word`, after enough operations have been done for `word` to have **at least** `k` characters.

Example 1:

Input: k = 5

Output: "b"

Explanation:

Initially, `word = "a"`. We need to do the operation three times:

* Generated string is `"b"`, `word` becomes `"ab"`. * Generated string is `"bc"`, `word` becomes `"abbc"`. * Generated string is `"bccd"`, `word` becomes `"abbcbccd"`.

Example 2:

Input: k = 10

Output: "c"

Constraints:

* `1 <= k <= 500`

Code Snippets

C++:

```
class Solution {
public:
char kthCharacter(int k) {

}
};
```

Java:

```
class Solution {
public char kthCharacter(int k) {

}
}
```

Python3:

```
class Solution:
def kthCharacter(self, k: int) -> str:
```