

65)COUNT AND SAY

The count-and-say sequence is a sequence of digit strings defined by the recursive formula:

- `countAndSay(1) = "1"`
- `countAndSay(n)` is the way you would "say" the digit string from `countAndSay(n-1)`, which is then converted into a different digit string.

CODE:

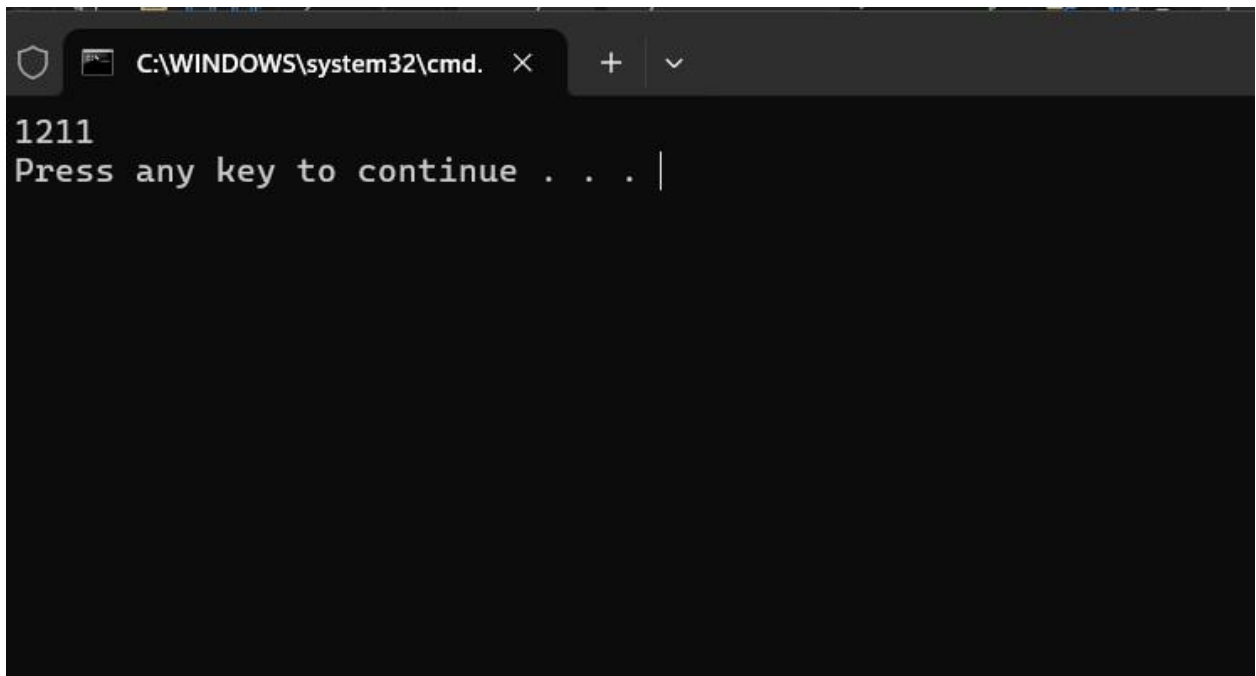
```
def countAndSay(n):
    if n == 1:
        return "1"

    prev_term = "1"
    for _ in range(2, n + 1):
        current_term = []
        i = 0
        while i < len(prev_term):
            count = 1
            while i + 1 < len(prev_term) and prev_term[i] == prev_term[i + 1]:
                count += 1
                i += 1
            current_term.append(str(count))
            current_term.append(prev_term[i])
            i += 1
        prev_term = "".join(current_term)

    return prev_term

a = 4
print(countAndSay(a))
```

OUTPUT:

A screenshot of a Windows command prompt window. The title bar shows the path 'C:\WINDOWS\system32\cmd.' and standard window controls. The command prompt displays the output '1211' on the first line, followed by the prompt 'Press any key to continue . . . |' on the second line. The background is black, and the text is white.

TIME COMPLEXITY : $O(2^n)$