

Problem 3704: Count No-Zero Pairs That Sum to N

Problem Information

Difficulty: **Hard**

Acceptance Rate: 12.80%

Paid Only: No

Tags: Math, Dynamic Programming

Problem Description

A **no-zero** integer is a **positive** integer that **does not contain the digit** 0 in its decimal representation.

Given an integer n , count the number of pairs (a, b) where:

a and b are **no-zero** integers. $a + b = n$

Return an integer denoting the number of such pairs.

Example 1:

Input: $n = 2$

Output: 1

Explanation:

The only pair is $(1, 1)$.

Example 2:

Input: $n = 3$

Output: 2

****Explanation:****

The pairs are `(1, 2)` and `(2, 1)`.

****Example 3:****

****Input:**** n = 11

****Output:**** 8

****Explanation:****

The pairs are `(2, 9)`, `(3, 8)`, `(4, 7)`, `(5, 6)`, `(6, 5)`, `(7, 4)`, `(8, 3)`, and `(9, 2)`. Note that `(1, 10)` and `(10, 1)` do not satisfy the conditions because 10 contains 0 in its decimal representation.

****Constraints:****

* $2 \leq n \leq 10^{15}$

Code Snippets

C++:

```
class Solution {
public:
    long long countNoZeroPairs(long long n) {

    }
};
```

Java:

```
class Solution {
    public long countNoZeroPairs(long n) {

    }
}
```

Python3:

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