# Problem 600: Non-negative Integers without Consecutive Ones

## Problem Information

**Difficulty:** Hard
**Acceptance Rate:** 41.18%
**Paid Only:** No
**Tags:** Dynamic Programming

## Problem Description

Given a positive integer `n`, return the number of the integers in the range `[0, n]` whose binary representations **do not** contain consecutive ones.

**Example 1:**

**Input:** n = 5 **Output:** 5 **Explanation:** Here are the non-negative integers <= 5 with their corresponding binary representations: 0 : 0 1 : 1 2 : 10 3 : 11 4 : 100 5 : 101 Among them, only integer 3 disobeys the rule (two consecutive ones) and the other 5 satisfy the rule.

**Example 2:**

**Input:** n = 1 **Output:** 2

**Example 3:**

**Input:** n = 2 **Output:** 3

**Constraints:**

* `1 <= n <= 109`

## Code Snippets

**C++:**

```
class Solution {
public:
int findIntegers(int n) {

}
};
```

**Java:**

```
class Solution {
public int findIntegers(int n) {

}
}
```

**Python3:**

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