

Problem 233: Number of Digit One

Problem Information

Difficulty: **Hard**

Acceptance Rate: 0.00%

Paid Only: No

Problem Description

Given an integer

n

, count

the total number of digit

1

appearing in all non-negative integers less than or equal to

n

.

Example 1:

Input:

$n = 13$

Output:

6

Example 2:

Input:

n = 0

Output:

0

Constraints:

0 <= n <= 10

9

Code Snippets

C++:

```
class Solution {  
public:  
    int countDigitOne(int n) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int countDigitOne(int n) {  
  
    }  
}
```

Python3:

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

Python:

```
class Solution(object):
    def countDigitOne(self, n):
        """
        :type n: int
        :rtype: int
        """
```

JavaScript:

```
/**
 * @param {number} n
 * @return {number}
 */
var countDigitOne = function(n) {

};
```

TypeScript:

```
function countDigitOne(n: number): number {

};
```

C#:

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

    }
}
```

C:

```
int countDigitOne(int n) {

}
```

Go:

```
func countDigitOne(n int) int {
```

```
}
```

Kotlin:

```
class Solution {  
    fun countDigitOne(n: Int): Int {  
  
    }  
}
```

Swift:

```
class Solution {  
    func countDigitOne(_ n: Int) -> Int {  
  
    }  
}
```

Rust:

```
impl Solution {  
    pub fn count_digit_one(n: i32) -> i32 {  
  
    }  
}
```

Ruby:

```
# @param {Integer} n  
# @return {Integer}  
def count_digit_one(n)  
  
end
```

PHP:

```
class Solution {  
  
    /**  
     * @param Integer $n  
     * @return Integer  
     */  
}
```

```
function countDigitOne($n) {  
  
}  
}
```

Dart:

```
class Solution {  
  int countDigitOne(int n) {  
  
  }  
}
```

Scala:

```
object Solution {  
  def countDigitOne(n: Int): Int = {  
  
  }  
}
```

Elixir:

```
defmodule Solution do  
  @spec count_digit_one(n :: integer) :: integer  
  def count_digit_one(n) do  
  
  end  
end
```

Erlang:

```
-spec count_digit_one(N :: integer()) -> integer().  
count_digit_one(N) ->  
.
```

Racket:

```
(define/contract (count-digit-one n)  
  (-> exact-integer? exact-integer?)  
)
```

Solutions

C++ Solution:

```
/*
 * Problem: Number of Digit One
 * Difficulty: Hard
 * Tags: dp, math
 *
 * Approach: Dynamic programming with memoization or tabulation
 * Time Complexity:  $O(n * m)$  where  $n$  and  $m$  are problem dimensions
 * Space Complexity:  $O(n)$  or  $O(n * m)$  for DP table
 */

class Solution {
public:
    int countDigitOne(int n) {

    }
};
```

Java Solution:

```
/**
 * Problem: Number of Digit One
 * Difficulty: Hard
 * Tags: dp, math
 *
 * Approach: Dynamic programming with memoization or tabulation
 * Time Complexity:  $O(n * m)$  where  $n$  and  $m$  are problem dimensions
 * Space Complexity:  $O(n)$  or  $O(n * m)$  for DP table
 */

class Solution {
    public int countDigitOne(int n) {

    }
}
```

Python3 Solution:

```

"""
Problem: Number of Digit One
Difficulty: Hard
Tags: dp, math

Approach: Dynamic programming with memoization or tabulation
Time Complexity: O(n * m) where n and m are problem dimensions
Space Complexity: O(n) or O(n * m) for DP table
"""

class Solution:
    def countDigitOne(self, n: int) -> int:
        # TODO: Implement optimized solution
        pass

```

Python Solution:

```

class Solution(object):
    def countDigitOne(self, n):
        """
        :type n: int
        :rtype: int
        """

```

JavaScript Solution:

```

/**
 * Problem: Number of Digit One
 * Difficulty: Hard
 * Tags: dp, math
 *
 * Approach: Dynamic programming with memoization or tabulation
 * Time Complexity: O(n * m) where n and m are problem dimensions
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 */

/**
 * @param {number} n
 * @return {number}
 */
var countDigitOne = function(n) {

```

```
};
```

TypeScript Solution:

```
/**
 * Problem: Number of Digit One
 * Difficulty: Hard
 * Tags: dp, math
 *
 * Approach: Dynamic programming with memoization or tabulation
 * Time Complexity: O(n * m) where n and m are problem dimensions
 * Space Complexity: O(n) or O(n * m) for DP table
 */

function countDigitOne(n: number): number {

};
```

C# Solution:

```
/*
 * Problem: Number of Digit One
 * Difficulty: Hard
 * Tags: dp, math
 *
 * Approach: Dynamic programming with memoization or tabulation
 * Time Complexity: O(n * m) where n and m are problem dimensions
 * Space Complexity: O(n) or O(n * m) for DP table
 */

public class Solution {
    public int CountDigitOne(int n) {

    }
}
```

C Solution:

```
/*
 * Problem: Number of Digit One
 * Difficulty: Hard
```

```

* Tags: dp, math
*
* Approach: Dynamic programming with memoization or tabulation
* Time Complexity: O(n * m) where n and m are problem dimensions
* Space Complexity: O(n) or O(n * m) for DP table
*/

int countDigitOne(int n) {

}

```

Go Solution:

```

// Problem: Number of Digit One
// Difficulty: Hard
// Tags: dp, math
//
// Approach: Dynamic programming with memoization or tabulation
// Time Complexity: O(n * m) where n and m are problem dimensions
// Space Complexity: O(n) or O(n * m) for DP table

func countDigitOne(n int) int {

}

```

Kotlin Solution:

```

class Solution {
    fun countDigitOne(n: Int): Int {

    }
}

```

Swift Solution:

```

class Solution {
    func countDigitOne(_ n: Int) -> Int {

    }
}

```

Rust Solution:

```
// Problem: Number of Digit One
// Difficulty: Hard
// Tags: dp, math
//
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// Time Complexity:  $O(n * m)$  where  $n$  and  $m$  are problem dimensions
// Space Complexity:  $O(n)$  or  $O(n * m)$  for DP table

impl Solution {
    pub fn count_digit_one(n: i32) -> i32 {

    }
}
```

Ruby Solution:

```
# @param {Integer} n
# @return {Integer}
def count_digit_one(n)

end
```

PHP Solution:

```
class Solution {

    /**
     * @param Integer $n
     * @return Integer
     */
    function countDigitOne($n) {

    }
}
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Dart Solution:

```
class Solution {
    int countDigitOne(int n) {
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