

Python:

```
def sum_strings(x, y):
    #reverse
    a, b = x[::-1], y[::-1]
    carry = 0
    result = []

    #essentially like how we learn math
    for i in range(max(len(a), len(b))):
        digit_a = int(a[i]) if i < len(a) else 0
        digit_b = int(b[i]) if i < len(b) else 0

        total = digit_a + digit_b + carry
        carry = total // 10
        result.append(str(total % 10))

    # carry
    if carry != 0:
        result.append(str(carry))

    return ''.join(result[::-1]).lstrip('0') or '0'
```

## sum\_strings

Time Complexity:

The time complexity is  $O(N)$ , where  $N$  is the length of the longer input string.

This is because the function iterates through each digit of the longer string once.

Space Complexity:

The space complexity is also  $O(N)$ , as the function stores the result of each digit's sum in a list.

The length of this list is proportional to the length of the longer input string.

Python:

```
def cakes(recipe, available):
    num_cakes_per_ingredient = []

    for ingredient, amount_needed in recipe.items():
        if ingredient not in available:
            return 0

        num_cakes = available[ingredient] // amount_needed
        num_cakes_per_ingredient.append(num_cakes)

    return min(num_cakes_per_ingredient)
```

### **cakes**

Time Complexity:

The time complexity of the cakes function is  $O(M)$ , where  $M$  is the number of ingredients in the recipe. This is because the function loops through each ingredient in the recipe exactly once.

Space Complexity:

The space complexity is  $O(M)$  as well, where  $M$  is the number of ingredients in the recipe. The function creates a list to store the number of cakes that can be made from each ingredient, and the size of this list is proportional to the number of ingredients.

Python:

```
def make_readable(seconds):  
  
    seconds = max(0, min(359999, seconds))  
    hours = seconds // 3600  
    minutes = (seconds % 3600) // 60  
    seconds = seconds % 60  
  
    return "{:02d}:{:02d}:{:02d}".format(hours, minutes, seconds)
```

### **make\_readable**

Time Complexity:

The time complexity of the function is  $O(1)$ . This is because the function performs a fixed number of operations regardless of the input size.

Space Complexity:

The space complexity is also  $O(1)$ . The function uses a fixed amount of space for the variables hours, minutes, and seconds, and the space required for the output string is also constant, as it always consists of 8 characters.