

Formula:

$$\sum_1^n = \frac{n(n+1)}{2}$$

Here are the steps to find the missing number.

1. Find the sum of elements of all the numbers in the array. Let's call it `sum`. This would require a linear scan, $O(n)$.
2. Then find the expected sum of the first n numbers using the formula: $\frac{n(n+1)}{2}$. Let's call it `total`.
3. The difference between `total` and `sum` is the missing number in the array.

'''

Given an array `nums` containing n distinct numbers in the range $[0, n]$,
return the only number in the range that is missing from the array.

Example 1:

Input: `nums = [3,0,1]`

Output: 2

Explanation: $n = 3$ since there are 3 numbers, so all numbers are in the range $[0,3]$. 2 is the missing number in the range since it does not appear in `nums`.

Example 2:

Input: `nums = [0,1]`

Output: 2

Explanation: $n = 2$ since there are 2 numbers, so all numbers are in the range $[0,2]$. 2 is the missing number in the range since it does not appear in `nums`.

Example 3:

Input: nums = [9,6,4,2,3,5,7,0,1]

Output: 8

Explanation: $n = 9$ since there are 9 numbers, so all numbers are in the range $[0,9]$. 8 is the missing number in the range since it does not appear in nums.

'''

```
def getMissingNumber(x):
    print(f"Array \t: {x}")
    length=len(x)
    print("length of array:", length)
    n=length+1
    print("length+1:", n)

    total=(length*n)//2
    #total=(n*(n+1))//2
    print(f"Formula[n*((n+1)/2) :{total}")
    s=sum(x)
    print(f"Sum of length: {s}")

    print(f"Difference is [total - sum]: {total -s}")
    return total -s

#a=[9,6,4,2,3,5,7,0,1]
#a=[0,1]
a=[3,0,1]
print(f"Missing number is \t: {getMissingNumber(a)}")
```