48. Merge Sorted Array

You are given two integer arrays nums1 and nums2, sorted in non-decreasing order, and

two integers m and n, representing the number of elements in nums1 and nums2

respectively.

Merge nums1 and nums2 into a single array sorted in non-decreasing order.

The final sorted array should not be returned by the function, but instead be stored inside

the array nums1. To accommodate this, nums1 has a length of m + n, where the first m

elements denote the elements that should be merged, and the last n elements are set to 0

and should be ignored. nums2 has a length of n.

Code:

```python
def merge(nums1, m, nums2, n):
    i, j, k = m - 1, n - 1, m + n - 1
    while i >= 0 and j >= 0:
        if nums1[i] > nums2[j]:
            nums1[k] = nums1[i]
            i -= 1
        else:
            nums1[k] = nums2[j]
            j -= 1
        k -= 1

    while j >= 0:
        nums1[k] = nums2[j]
        j -= 1
        k -= 1
nums1 = [1,2,3,0,0,0]
m = 3
nums2 = [2,5,6]
n = 3
merge(nums1, m, nums2, n)
print(nums1)
```

Output:

```
[1, 2, 2, 3, 5, 6]
```

Time Complexity:

- T(n)= O(n+m)