

Algorithm Explanation:

The `removeDuplicates` method in the `Solution` class takes a list of integers `nums` sorted in non-decreasing order. It aims to remove duplicate elements from the list in place while maintaining the relative order of the elements. The method returns the number of unique elements present in the modified list.

The algorithm utilizes two pointers to achieve this:

1. Initialize a pointer `j` to keep track of the position to which unique elements should be moved. Initially, `j` is set to 1 as the first element is always unique.
2. Iterate through the list `nums` starting from the second element using a loop.
3. Compare the current element `nums[i]` with the previous unique element `nums[j - 1]`.
 - If they are different, it indicates a new unique element is found. Move this element to the position of the next unique element (`j`) and increment `j`.
4. Continue this process until all elements in the list are processed.
5. Return the value of `j`, which represents the number of unique elements in the list.

Example Usage:

Python

Instantiate the Solution class

```
solution = Solution()
```

Example 1

```
nums1 = [1, 1, 2]
```

```
print(solution.remove_duplicates(nums1))
```

Output: 2, nums = [1, 2, _]

Example 2

```
nums2 = [0, 0, 1, 1, 1, 2, 2, 3, 3, 4]
```

```
print(solution.remove_duplicates(nums2))
```

Output: 5, nums = [0, 1, 2, 3, 4, _, _, _, _, _]

In Example 1, the input list `nums1` contains duplicate elements `[1, 1, 2]`. After calling `remove_duplicates(nums1)`, the duplicate `1` is removed, and the modified list becomes `[1, 2, _]`, where `_` represents additional irrelevant elements. The method returns `2` as two unique elements remaining in the list.

Similarly, in Example 2, the input list `nums2` contains duplicate elements `[0, 0, 1, 1, 1, 2, 2, 3, 3, 4]`. After calling `remove_duplicates(nums2)`, the duplicate elements are removed, and the modified list becomes `[0, 1, 2, 3, 4, _, _, _, _, _]`, where `_` represents additional irrelevant elements. The method returns `5` as five unique elements remaining in the list.