DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Discover. Learn. Empower.

Experiment 5

Student Name:Suryansh **UID: 22BCS15110**
Branch: CSE **Section/Group: 638/B**
Semester: 6 **Date of Performance: 24/7/2024**
Subject Name: Advanced Programming Lab-1 **Subject Code:** 22CSP-314

1. **Title :Sort colors**

2. **Aim:** Given array nums with n object colored red, white or blue, sort them in –place so that object of the same colore are adjacement, with the colors in the order red, white and blue.

   While will use the integers 0,1and 2 to represent teh color red, white and blue,respectively

3. **Objective:**
   Exmaple 1:
   Input : nums =[2,0,2,1,1,0]
   Output : [0,0,1,1,2,2]

   Example 2:
   Input; nums =[2,0,1]
   Output: [0,1,2]

4. **Implementation/Code:**

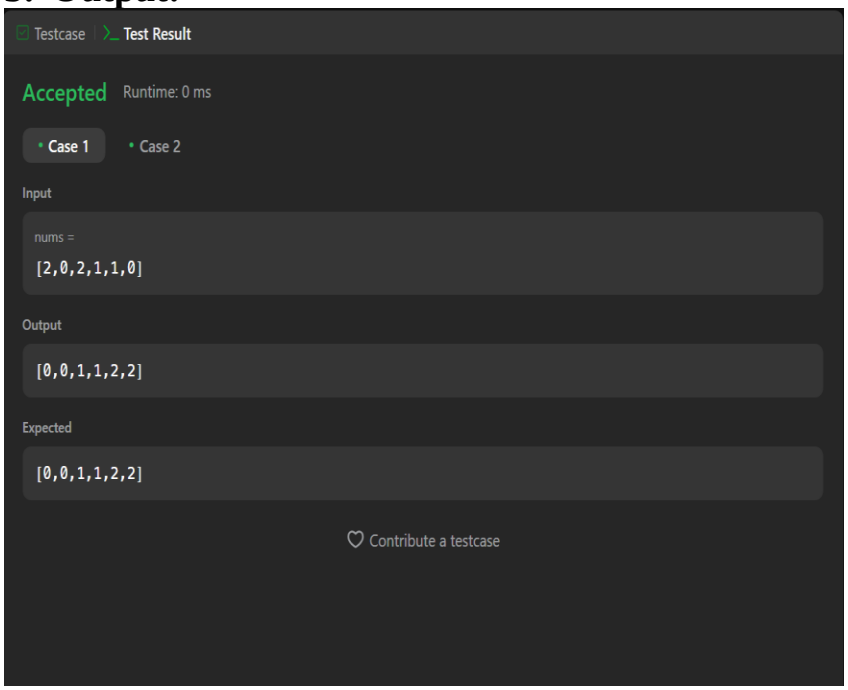
```
class Solution {
  public void sortColors(int[] nums) {
    int l = 0;
    int r = nums.length - 1;

    for (int i = 0; i <= r;)
      if (nums[i] == 0)
        swap(nums, i++, l++);
      else if (nums[i] == 1)
        ++i;
      else
        swap(nums, i, r--);
  }

  private void swap(int[] nums, int i, int j) {
    final int temp = nums[i];
    nums[i] = nums[j];
```

```
    nums[j] = temp;
  }
}
```

5. Output:



6. **Learning Outcomes:**

   - Learned how to apply a greedy algorithm to make optimal decisions at each step
   - Understand how to efficiently use arrays and pointers totraverse and modify data
   - Develop skills in optimizing problem-solving approaches by minimizing operations to achieve a desiredoutcome,

7. **Time Complexity: O(n)**
8. **Space Complexity:** O(1)