Sort Array of 0s, 1s and 2s CodeStudio

You are given an array containing only 0s, 1s, and 2s. Your task is to sort the array in non-decreasing order.

Approach 1: Using Bubble Sort to sort the array of 0s, 1s and 2s

The first approach uses Bubble Sort to sort the array.

It iterates through the array and compares adjacent elements, swapping them if they are in the wrong order.

This process is repeated until the array is sorted.

Time Complexity: O(N^2) where N is the size of the array.

Space Complexity: O(1)

Approach 2: Using Dutch National Flag algorithm to sort 0s, 1s and 2s

The second approach uses the Dutch National Flag algorithm to sort the array.

It maintains three pointers: low, mid, and high.

The low pointer keeps track of the position where 0 should be placed, the mid pointer moves through the array, and the high pointer keeps track of the position where 2 should be placed.

We traverse the array from left to right using the mid pointer and perform the following operations:

If the current element is 0, we swap it with the element at the low pointer and increment both low and mid pointers.

If the current element is 1, we simply increment the mid pointer.

If the current element is 2, we swap it with the element at the high pointer and decrement the high pointer.

This process continues until the mid pointer crosses the high pointer, resulting in a sorted array.

Time Complexity: O(N) where N is the size of the array.

Space Complexity: O(1)

Which approach is better:

The second code (Approach 2: Dutch National Flag algorithm) is more efficient.