

Dutch National Flag Problem explanation

March 22, 2022

0.1 Problem Statement

Given an array containing only 0's, 1's and 2's perform an in-place sorting algorithm that traverses the input array only once. Hence time complexity is $O(n)$.

0.1.1 Design Considerations

The basic idea is that by sorting all the *zeros* and *two's* accurately then the ones are automatically sorted. Hence to achieve this two pointers to keep track of *zeros* and *twos* were used.

0.1.2 Space and Time Complexity.

The space complexity of the algorithm was $O(1)$ since no extra space was utilized during algorithm implementation.

The time complexity was $O(n)$ since a complete traversal of the array was performed albeit once.