

Problem 4: Dutch National Flag Problem

In this problem, we keep a track of position of 0's and 2's in the given array. Initially, we initialize the pointer to next position of 0 as 0 and next position 2 as end of given array. While traversing, if we found 0 then we swap the element at traversing index and next 0 pointer, also we update the next position of 0 counter. Similar strategy can be used with 2 and if we encounter 1 then we simply increment the traversing index.

Time complexity:

$O(n)$: We are traversing the array once.

Space complexity:

$O(1)$: Only 2 values are stored at a time.