

## Sort Colors (Dutch National Flag Algorithm)

### 75. Sort Colors

Solved

Medium Topics Companies Hint

Given an array `nums` with  $n$  objects colored red, white, or blue, sort them **in-place** so that objects of the same color are adjacent, with the colors in the order red, white, and blue.

We will use the integers `0`, `1`, and `2` to represent the color red, white, and blue, respectively.

You must solve this problem without using the library's sort function.

#### Example 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]`

#### Constraints:

- $n == \text{nums.length}$
- $1 \leq n \leq 300$
- `nums[i]` is either `0`, `1`, or `2`.

**Follow up:** Could you come up with a one-pass algorithm using only constant extra space?

eg. i/p: `nums = [2,0,2,1,1,0]`  
o/p: `[0,0,1,1,2,2]`

0 0 1 1 2 2

### class Solution {

public:

void sortColors(vector<int> &arr) {

int n = arr.size();

int start = 0, end = n-1;

for(int i = start; i <= end; i++) {

if(arr[i] == 0) {

swap(arr[i], arr[start]);

start++;

else if (arr[i] == 2) {

swap(arr[i], arr[end]);

end--;

i--;

}

}

}

};

T.C:  $O(n)$

S.C:  $O(1)$