★ Sort 0's, 1's & 2's

→ Input : 0 1 2 2 1 0 0 1 2

Output : 0 0 0 1 1 1 2 2 2

★ Approach :-

→ using quick sort
$$T.C. = O(N \log N)$$
$$S.C = O(1)$$

→ using counting sort
→ count number of 0's, 1's & 2's
→ put 0's then 1's & then 2's

$$T.C. = O(N)$$
$$S.C = O(1)$$

→ using three pointers

┌─────────────────────────┐
│ Dutch National Flag   │
└─────────────────────────┘

→ In this approach, we will use
3 pointers
(i) low (ii) mid (iii) high

→ Algorithm

- if (nums[mid] == 0)

  swap (low, mid)
  do low++ & mid++

- else if (mid == 1)
  mid++

- else if (mid == 2)
  swap (nums mid, high)
  do high--;

→ Code

```
low = 0, mid = 0, high = size-1 ;

while (mid <= high) {
    if (nums[mid] == 0 ) {
        swap(nums[low++],
             nums[mid++]);
    }
    else if (nums[mid] == 1) {
        mid++;
    }
    else if (nums[mid] == 2) {
        swap(nums[mid],
             nums[high--]);
    }
}
```