1. Finding equilibrium index of an array

2. Inversion count of an array

3. A 3 x 3 magic square is a 3 x 3 grid filled with distinct numbers from 1 to 9 such that each row, column, and both diagonals all have the same sum.

Given a row x col grid of integers, how many 3 x 3 "magic square" subgrids are there? (Each subgrid is contiguous).

Example:

Input: grid = [[4,3,8,4],[9,5,1,9],[2,7,6,2]]

Output: 1

[4,3,8],[9,5,1],[2,7,6]

4. Sums of distance, You are given a 0-indexed integer array nums. There exists an array arr of length nums.length, where arr[i] is the sum of |i - j| over all j such that nums[j] == nums[i] and j != i. If there is no such j, set arr[i] to be 0.

Return the array arr.

Example 1:

Input: nums = [1,3,1,1,2]

Output: [5,0,3,4,0]

Explanation:

When i = 0, nums[0] == nums[2] and nums[0] == nums[3]. Therefore, arr[0] = |0 - 2| + |0 - 3| = 5.

When i = 1, arr[1] = 0 because there is no other index with value 3.

When i = 2, nums[2] == nums[0] and nums[2] == nums[3]. Therefore, arr[2] = |2 - 0| + |2 - 3| = 3.

When i = 3, nums[3] == nums[0] and nums[3] == nums[2]. Therefore, arr[3] = |3 - 0| + |3 - 2| = 4.

When i = 4, arr[4] = 0 because there is no other index with value 2.

Example 2:

Input: nums = [0,5,3]

Output: [0,0,0]

Explanation: Since each element in nums is distinct, arr[i] = 0 for all i.

5. Sort Colors: Given an array containing only 0s, 1s, and 2s, sort it in-place in O(n) time without using additional space.