Problems on Array - 4

Assignment Questions

PW SKILLS

Q1. Given an array of integers of length n, and an integer m, (m < n), divide the array into 2 subarrays such that 1 part contains m elements and the other part contains the rest of the elements. This division has to be done such that the difference between the sum of elements of both the sub arrays is the maximum. You have to print the maximum difference in the sum possible. (Medium)

Input1:
N = 6
Arr[] = 7 4 6 0 8 2
M = 2
Output1:
23

Input2:
N = 3
Arr[] = 3 1 2
M = 1
Output2:
4

Q2. Given an integer array arr consisting of 0's and 1's only, return the max length of sequence which contains equal numbers of 0 and 1. If no such subarray exists, print -1. (Medium)

Input1:
N = 7
arr=[0,1,1,0,1,1,1]
Output1:
4

Input2:
N = 3
arr=[1,1,1]
Output2:
-1

Q3. There is a biker going on a road trip. The road trip consists of n + 1 points at different altitudes. The biker starts his trip on point 0 with altitude equal 0.
You are given an integer array gain of length n where gain[i] is the net gain in altitude between points i and i + 1 for all (0 <= i < n). Return the highest altitude of a point. (Medium)

Input1:
n = 5
gain = [-5,1,5,0,-7]
Output1:
1

Input2:
n = 7
gain = [-4,-3,-2,-1,4,3,2]
Output2:
0

Q4. Given a 0-indexed integer array nums, find the leftmost middleIndex (i.e., the smallest amongst all the possible ones). (Medium)
A middleIndex is an index where nums[0] + nums[1] + ... + nums[middleIndex-1] == nums [middleIndex+1] + nums[middleIndex+2] + ... + nums[nums.length-1].
If middleIndex == 0, the left side sum is considered to be 0. Similarly, if middleIndex == nums.length - 1, the right side sum is considered to be 0.
Return the leftmost middleIndex that satisfies the condition, or -1 if there is no such index.

Input1:
n = 5
nums = [2,3,-1,8,4]
Output1:
3
Input2:
n = 3
nums = [1,-1,4]
Output2:
2