Assignment

Question-1

Given an array of size n and an integer k, return the count of distinct numbers in all windows of size k.

Input:
arr[] = {1, 2, 1, 3, 4, 2, 3};
k = 4
Output:
3 4 4 3

Explanation:
First window is {1, 2, 1, 3}, count of distinct numbers is 3
Second window is {2, 1, 3, 4} count of distinct numbers is 4
Third window is {1, 3, 4, 2} count of distinct numbers is 4
Fourth window is {3, 4, 2, 3} count of distinct numbers is 3

Input:
arr[] = {1, 2, 4, 4};
k = 2
Output:
2 2 1

Explanation:
First window is {1, 2}, count of distinct numbers is 2
First window is {2, 4}, count of distinct numbers is 2
First window is {4, 4}, count of distinct numbers is 1

Complexity should be reduced to O(n)

Question-2

Write a program that, given an array A[] of n numbers and another number x, determines whether or not there exist two elements in S whose sum is exactly x.

Input:
arr[] = {0, -1, 2, -3, 1}
sum = -2
Output: -3, 1
If we calculate the sum of the output,
1 + (-3) = -2

Input:
arr[] = {1, -2, 1, 0, 5}
sum = 0
Output: -1
No valid pair exists.