Data Structure and Algorithms

Problem Set 4: Arrays and Strings

Date of issue: **Due Date:**

Problem 1) Write a function rotate(ar[], d, n) that rotates arr[] of size n by d elements.
Input: - e.g. input an array with n=7 elements are 1 2 3 4 5 6 7 and rotation d=2 the output
Output: - 3 4 5 6 7 1 2

Problem 2) Write a program to print all the LEADERS in the array. An element is leader if it is greater than all the elements to its right side. And the rightmost element is always a leader.
Input: - 16, 17, 4, 3, 5, 2
Output: - leaders are 17, 5, 2

Problem 3) Given an array of positive numbers, find the maximum sum of a subsequence with the constraint that no 2 numbers in the sequence should not be adjacent in the array.

Sr. No.	Input	Output
1	3 2 7 10	13 (sum of 3 and 10)
2	3 2 5 10 7	15 (sum of 3, 5 and 7)

Problem 4) Print the elements of an array in the decreasing frequency if 2 numbers have same frequency then print the one which came first.

Sr. No.	Input	Output
1	2, 5, 2, 8, 5, 6, 8, 8	8, 8, 8, 2, 2, 5, 5, 6
2	2, 5, 2, 6, -1, 9999999, 5, 8, 8, 8	8, 8, 8, 2, 2, 5, 5, 6, -1, 9999999

Problem 5) You are given an array of 0s and 1s in random order. Segregate 0s on left side and 1s on right side of the array. Traverse array only once
Input: - 0, 1, 0, 1, 0, 0, 1, 1, 1, 0
Output: - 0, 0, 0, 0, 0, 1, 1, 1, 1, 1

Problem 6) Given an array arr[] of n integers, construct a Product Array prod[] (of same size) such that prod[i] is equal to the product of all the elements of arr[] except arr[i]. Solve it **without division operator and in O(n)**
Input: - arr[] = {10, 3, 5, 6, 2}
Output: - prod[] = {180, 600, 360, 300, 900}