

Sri Sivasubramaniya Nadar College of Engineering, Kalavakkam - 603 110
(An Autonomous Institution, Affiliated to Anna University, Chennai)

UCS2403: DESIGN & ANALYSIS OF ALGORITHMS

Assignment 5

1. Recall the problem statement for counting inversions in a list.
 - (a) Modify the algorithm of Mergesort to count inversions in a given list.
 - (b) Compare the time complexity of this algorithm against the time complexity of the code you wrote in Assignment 3 to compute the count of inversions.
2. (a) Given a list A of size n , find the sum of elements in a subset A' of A such that the elements of A' are contiguous and has the largest sum among all such subsets. Please note that:
 - the subset should be having elements that are contiguous in the original list.
 - the input list may have negative values.
 - the algorithm should be based on divide and conquer strategy.

Example:
Input: $A = [-2, 1, -3, 4, -1, 2, 1, -5, 4]$
Output: 6
- (b) Write the recurrence relation for the time complexity of your algorithm, and find a closed form expression for the same.