Assignment 5

CS 350
Due: November 13, 2019

Your solutions must be typed (preferably typeset in LaTeX) and submitted as a hard-copy at the beginning of class on the day its due. The answers that you provide should clearly demonstrate that you understand the assignment and should provide enough information to clearly explain your solution to a peer. When asked to provide an algorithm you need to give well formatted pseudocode, a description of how your code solves the problem, and an analysis of its worst case complexity.

---

1 Maximum Subarray Sum

The Maximum Subarray Sum problem is the task of finding the contiguous subarray with largest sum in a given array of integers. Each number in the array could be positive, negative, or zero. For example: Given the array $[-2, 1, -3, 4, -1, 2, 1, -5, 4]$ the solution would be $[4, -1, 2, 1]$ with a sum of 6.

(a) [5 points] Give a brute force solution for this problem with complexity of $O(n^2)$.

(b) [10 points] Give a divide and conquer solution for this problem with complexity $O(n \log n)$.