COP 3503 Honors – Homework 2 (Non-Collaborative)

Due Date: September 21, 2012

1. Write pseudocode for the brute force method of solving the maximum-subarray problem. Your procedure should run in $\Theta(n^2)$ time.

2. Implement both the brute force and recursive algorithms for the maximum-subarray problem in Java. What problem size n_0 gives the crossover point at which the recursive algorithm beats the brute force algorithm? Then change the base case of the recursive algorithm to use the brute force algorithm whenever the problem is less than n_0. Does that change the crossover point? Please provide a listing of your code when you hand in the assignment.

3. How would you modify the QUICKSORT algorithm so that it sorts the numbers in nonincreasing order? Provide pseudocode for your solution.