CSCE 500 Spring 2014
Homework #2 (Due on 2/20/2014)

1. For the following questions, assume that an array implementation of heap.

a. If you are adding one element at a time onto a heap that maintains min heap property, find the tight bound taken to add N elements to the min-heap.

b. Suppose these N elements are already in an array, not in any particular order. Find the tight bound to maintain the min-heap property for this array of N elements.

c. Assuming that the content of an array in problem b. is shown as 10,12,7,1,5,9,20,6,15. Show the content of the array after maintaining the min-heap property.

d. Obtain the time complexity of combining two min heaps of length N.

2. Solve for the recurrence relation of the following using the master theorem

a. $T(n)= 2T(n/2) + n^3$

b. $T(n) = 16\ T(n/4) + n^2$

c. $T(n) = 7\ T(n/2) + n^2$

d. $T(n) = 2T(n/4) + n^{0.5}$

e. T(n) = 3T9n/2) = n log n