Home Work 2  Due day: Feb. 24

All solutions should be typed, using Latex preferably.

(1) Use recursion tree to guess a bound, then proof it using induction. Finally, use master theorem to directly get the bound. Try to make your bounds as tight as possible.
    \[ T(n) = 2T(n/2) + n^2 \]
    \[ T(n) = T(n-2) + 1/n \]

(2) Show that Sort-and-Count algorithm for counting the number of inversions runs in \( O(n \log n) \) time for a list with \( n \) elements.

(3) Chapter 5, 1
(4) Chapter 5, 3
(5) Chapter 5, 5
(6) Chapter 5, 6