

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