CSE 2331 - Problem Set 3
Due beginning of lecture on October 8th

Problem numbers are from the third edition of "Introduction to algorithms". If unsure about which problem to solve, ask. Collaboration is permitted; looking for solutions from external sources (books, the web, etc.) is prohibited.

1. The kth quantiles of an n-element set are the $k - 1$ order statistics that divide the sorted set into k equal-sized sets (to within 1). For example, the 4th quantiles of an array of size 64 are the 16th, 32nd and 48th order statistics. Give an $O(n \log k)$-time algorithm to list the kth quantiles of a set.

2. 6.1-7

3. 6.4-3

4. (a) Draw the binary tree produced by inserting the following elements in a max-heap in the given order: 4,5,3,8,7,2,9,12. (Show your work.)

   (b) List the elements of the array which represents the heap in the previous part. List the elements in the order they appear in the array.