Algorithms
Computer Science 140 & Mathematics 168
Spring 2012
Homework 2a
Due Thursday, January 26

Please use LaTeX to typeset this assignment.

1. **[20 Points] Order Statistics Revisited.** In class we showed that the recursive **Select** algorithm runs in worst-case time $\Theta(n \lg n)$ if the array is partitioned into groups of 3 but runs in time $\Theta(n)$ if the array is partitioned into groups of 5. Now we'll investigate what happens if the algorithm is implemented so that the array is partitioned into groups of 7. Give the recurrence relation that arises when groups of 7 are used, and explain why your recurrence relation is correct. Then use the analysis technique that we used in class to derive the big-Theta running time of this variant of the algorithm. Explain every step of your analysis very carefully! Hmmm, very interesting!