MCS/CS 401, Fall 2015, Midterm 1, Topics
Outline

September 28, 2015

• asymptotic notation ($O, \Omega, \Theta$), worst-case and average case running time of algorithms

• recurrences, solution methods (substitution, recursion-tree), master theorem

• probabilistic analysis, randomized algorithms, hiring problem

• sorting algorithms: insertion sort, mergesort, heapsort, quicksort, randomized quicksort, counting sort

• decision trees, lower bound for sorting

• finding the maximum, selection in expected linear time (outline), selection in worst-case linear time

Chapters and sections covered

Chapters 1, 2, 3, Sections 4.3 - 4.5, Sections 5.1 - 5.3, Sections 6.1 - 6.4, Chapter 7, Sections 8.1 - 8.2, Chapter 9