

22C : 031 (CS : 3330 : 0001) Algorithms

Homework 9

April 27, 2012

This homework is also based on our discussions of NP-completeness from Chapter 8.

1. Suppose that we have a subroutine that, given any undirected graph G' , returns the *size* of the largest independent set in G' . Describe an algorithm (that uses this subroutine) and solves the following problem: given an undirected graph G , output the set of vertices in a largest independent set of G . The algorithm should run in polynomial time and make at most a polynomial number of calls to the subroutine. We don't count the running time of the subroutine itself.
2. Exercise 1 of Chapter 8
3. Exercise 2 of Chapter 8
4. Exercise 6 of Chapter 8

The lecture on Monday, April 30, will be useful background for solving the last three problems. The homework is due Friday, May 4, in class; if you can't make it to class on that day, just make sure you get it to me by that time.