CSE 331: Introduction to Algorithm Analysis and Design   Fall 2011

Homework 5
Due Friday, October 21, 2011 by 1:15pm in class

IMPORTANT: Please submit each problem separately, i.e. each problem should begin on a new page and only the pages for one problem should be stapled together. Failure to do so might result in some problem(s) not being graded.

For general homework policies and our suggestions, please see the policy document.

This HW is probably harder than usual. Please start early!

1. (40 points) Exercise 3 in Chapter 4.

   Note: In this problem you are *given* the algorithm. The problem is asking you to analyze the algorithm using an analysis similar to the one we saw in class for Interval Scheduling. It might help to mathematically formulate the problem first. So some fraction of the grade will be allotted to the mathematical formulation of the problem. Also, in many real life problems, not all parameters are equally important, so keep that in mind when tackling this question.

2. (45 points) Exercise 5 in Chapter 4.

   Hint: Think of a greedy way to place the cell towers. It might help to forget about the scheduling algorithms we have seen in class and just think of a greedy algorithm from "scratch." Then try to analyze the algorithm using similar arguments to one we have seen in class.

3. (15 points) Exercise 9 in Chapter 3.

   (*Hint:* It *might* be helpful to start thinking about an algorithm to solve the problem in the first place.)