CSE 101: Homework 0 (not for credit)

Due: Day 4

This assignment is designed to help both you and the instructor see that you meet the prerequisites of the class. It is also useful for you to get an idea of how homeworks will be graded.

Exercises

Kleinberg refers to the book *Algorithm Design* by *Kleinberg* and Tardos. *Edmonds* refers to the online book *How to Think about Algorithms* by *Edmonds*.

1. *Kleinberg* Chapter 2, Exercise 3. In addition, show why the ordering is correct. *20 pts.*

2. *Kleinberg* Chapter 2, Exercise 6. *20 pts.*

3. *Edmonds* Exercise 3.9.1 (first four problems). Note the word *formally* (using the definition of O and θ). *15 pts.*

4. *Kleinberg* Chapter 3, Exercise 9. *20 pts.*

5. *Kleinberg* Chapter 3, Exercise 5. *15 pts.*

6. Show that: *10 pts.*

   - $T(n) = T(\lceil \frac{n}{2} \rceil) + 1$ is $O(\lg n)$
   - $T(n) = 2T(\lfloor \frac{n}{2} \rfloor + 17) + n$ is $O(n \lg n)$

7. *Kleinberg* Chapter 2, Exercise 8. *Extra credit*