CSE 326: Data Structures
Assignment #1
March 25, 1996
due: Monday, April 1

1. Write a procedure `LLDelete` that is the companion of `LLInsert` of Algorithms 1.5 and 1.6. `LLDelete` takes a key K and a linked list, and deletes the first cell containing key K on the list, if such a cell exists, otherwise it does nothing. As in `LLInsert`, you should assume that the linked list is ordered in nondecreasing key order.
   (a) Write `LLDelete` using locatives.
   (b) Write `LLDelete` without locatives.
2. Prove part 5 of the Big-O Theorem given on page 23.
3. Here is a list of 11 functions of n:
$$n^2, 3000\log_2 n, n^{3/2}, 2^n, 50000, 5\sqrt{n}, \frac{1}{100}n + 10000, n^3, (5n - \sqrt{n})^2, n\log_2 n, 10n.$$
   (a) List these functions in order, so that if $f(n)$ is before $g(n)$ in your list, then $f(n) \in O(g(n))$. No justification is needed.
   (b) Which pairs $(f(n), g(n))$ on your list are "equivalent", in the sense that $f(n) \in \Theta(g(n))$? No justification is needed.
4. Page 68, exercise 18. (See exercise 15 for an explanation of "order of T". Beware of the book's convention of using indentation instead of **begin** and **end** — see page 9.)
5. Page 68, exercise 19.
6. Page 68, exercise 20.