Assignment 4

Procedures

You may turn in your work either in paper form or via Blackboard. (On Blackboard is preferred, even if this means scanning in handwritten solutions.)

If in paper form, then write up answers to the exercises below (using only one side of the paper), staple multiple sheets, and put them either in my mailbox in the C.S. Department office (527 Duckering) or in the dropbox just outside the office. Be sure to put your **name** on your work.

Otherwise, submit a PDF file containing answers to the exercises below on the UAF Blackboard Learn site, under Assignment 4 for this class.

- Your submission must be a **PDF** holding your answers to the exercises, with your **name** near the top of the first page.
- I may not look at your homework submission immediately. If you have questions, e-mail me.

Hints: When approaching these problems, it often pays to think about which section of the book they appear in. If you're still stuck, look at the hint in the back of the book (although this is not always relevant.) If even that fails, **come talk to me!** I have office hours for a reason…

Exercises (30 pts total)

Do each of the following exercises. "L 2.4/9" means section 2.4 in the Levitin text, exercise #9.

A. L 3.2/8.
   "Design an algorithm" means that I want a precise enough description that I could write code based on it. (You may suppose that I am a reasonably competent programmer.)

B. L 4.5/13.
   Note: Be careful with this one! Whatever algorithm you come up with, I strongly suggest that you try it out on some actual data. In particular, you should construct a sizable matrix that meets the required conditions, and in which the value being searched for occurs exactly once, somewhere in the middle of the matrix. Does your algorithm find it? And is it really O(n)?

C. L 5.1/5.

D. L 5.2/11.

E. L 5.3/5.
   In each part, give a list of the values in the order they will be visited.

F. L 6.1/8.

G. L 6.6/6.

H. L 7.1/6.

I. L 7.1/7.
   In part b, describe an algorithm.

J. L 7.3/3.