Homework 3: APL

This homework is due February 14, 1991, (by 5:00 PM).

Test your programs using the `apl` command on Unix, which is the interpreter described in Appendix C. Programs that use `set`, `while`, recursion, and `if` will receive less credit than programs that do not use these features. Put your APL code for the standard problems in `hw3.l`. Hand in a print-out of the code, and please put your name on it. (If you do extra-credit problems, please write the names of the file(s) where the source code for your solutions can be found on your print-out.)

1. (3 points) Do problem 1 on page 88 of Kamin's book (count).
2. (10 points) Do problem 5 on page 89 of Kamin's book. Type your solutions in the following form:

   ```
   ; 5(a)
   (define part-a (n)(restruct ...))
   ```

3. (5 points) Do problem 6 on page 90. You may assume that the argument matrix is an n, n-matrix, for some $n \geq 0$. The "diagonal" of an n, n-matrix (a_{ij}) goes from the top left to the lower right: that is the elements a_{ii}.

   Does your answer work for an m, n-matrix?
4. (extra credit only) Do one or more of problems 8, 9, 10, or 11 on page 90.
5. (extra credit only) Do (one or more of) the problems 12, 13, 14, or 15 in section 3.6.2 of Kamin's book. You will find the source for the APL interpreter in

   ```
   /home/cs342/public/src/chap.3/apl.p
   ```

   Make a copy using the Unix `cp` command and then edit your copy. Turn in differences (using the Unix command `diff`) as before.