

**Problem Set 4**  
CPSC 411 Analysis of Algorithms  
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**The assignment is due next Wednesday, Feb 25, 2009, before class.**

**Exercise 1.** *Solve Exercise 15.2-1 on page 338 of our textbook. Use the algorithm given in class. Show the arrays, and explain how the solution is derived from these arrays.*

**Exercise 2.** *Solve Exercise 15.2-2 on page 338.*

**Exercise 3.** *Solve Exercise 15.4-1 on page 355.*

**Exercise 4.** *Explore the literate programming style. Install and experiment with a simple literate programming tool such as `noweb` (the installation will not go smoothly on any system, but the errors can be ignored on most). Produce one program in the literate programming style. Get familiar with the literate programming paradigm by reading*

(1) <http://www.literateprogramming.com/knuthweb.pdf>

(2) *The documentation of `noweb` (or whatever literate programming system you will be using).*

(3) *The Fibonacci number example provided on the class web page.*

*Turn in one short example program (i.e., a print out of the documentation) that you have written and documented in the literate programming style.*

**Exercise 5.** *Solve Problem 15-2 on page 364. Notice that there are three cases concerning the cost  $lc[i, j]$  of a line containing words  $i$  through  $j$ , namely 0 if it is the last line, or  $\infty$  if the words do not fit, or simply the third power of the the number of extra spaces needed to pad the line. Use  $lc$  to derive a minimal cost  $c[j]$  to typeset the first  $j$  words in a paragraph.*

**Exercise 6.** *(Demonstrate your program to our TA Yue Li not later than one week after the deadline of the paper and pencil homework. Implement the algorithm that you have derived in Exercise 4 in C, C++, or JAVA in the literate programming style.*