CSC/MAT-220: Discrete Structures
EFY 8

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Due: October 20, 2017

Puzzle of the Week. A watermelon starts out weighing 100 pounds at 99% water. After sitting out in the sun, some of the water evaporates. How much does the watermelon weigh, now that it is 98% water?

Your solution should employ basic logic arguments, not lengthy arithmetic.

Code of the Week. Let $p(x) = a_0 + a_1x + \cdots + a_nx^n$ be a polynomial of degree n whose coefficients $a_0, a_1, \ldots, a_n$ are real numbers. Write pseudo-code for a recursive function that evaluates $p(x)$, for a specific value of x. Be sure to consider the following in your solution:

- Use tail recurssion to minimize the size of each subproblem.
- Nest your problem carefully to minimize the total number of arithmetic operations needed. For example, the following expression

  $$a_0 + a_1t + a_2t^2 + a_3t^3$$

  requires 3 additions and 9 multiplications; whereas, this expression

  $$((a_3t + a_2)t + a_1) * t + a_0$$

  requires 3 additions and 3 multiplications.