COMP 312
Assignment 2
Due at 9:00 am, Thursday, February 17, 2011
All problems are of equal value.

Reading

Cormen, Leiserson, Rivest and Stein, Chapters 4, 7 and 9 (also sections 2.3, 33.4).

Practice

CLRS, 4.1-1...5, 4.2-3, 4.2-4, 4.2-6,4.3-1...3, 4.3-5...9, 4.4-1...9, 4.5-1...4, 4-1, 4-3 (b,d,e,g,i), 4-5, 4-6, 7.2-1, 7.2-2, 7.2-3, 7.2-4, 7.4-1, 7.4-2, 7.4-3, 7-3, 7-5, 9.1-1, 9.1-2, 9.3-1...7, 9.3-9, 9-1, 9-2, 9.3, 33.4-3, 33.4-4, 33.4-5, 33-3.

To Be Handed In

1. (a) CLRS, 4.2-5
   (b) CLRS, 4.2-7
2. CLRS, 4-3 (a), (c), (f), (h), (j)
3. CLRS, 2.3-7
4. CLRS, 9.3-8
5. Express the running time (as a function of the length of y only, i.e., assume that x is fixed for this analysis and compute the asymptotic running time as the size of y increases) of the following pseudo-code algorithm as a recurrence and solve it. Assume x and y are positive integers and the addition of two integers requires constant time. What does the algorithm do?

   $M(x, y)$:

   if $y = 0$ return 0 else

   return $M(2x, \lfloor y/2 \rfloor) + x \cdot (y \bmod 2)$