COMP 304
Assignment 1
Due 7 pm, Tuesday, September 16, 2008
All problems are of equal value.

Reading

Cormen, Leiserson, Rivest and Stein, Chapters 1, 2, & 3.

Practice

CLRS, 1.2-2, 1-1, 2.1-1, 2.1-2, 2.2-1, 2.2-3, 2.2-4, 2.3-4, 2-4, 3.1-1...8, 3.2-1, 3.2-5, 3-1, 3-3, 3-4 (c)-(f), 3-5, A-1

To Be Handed In

1. CLRS, 1.2-3

2. CLRS, 2.1-4. In addition to solving the problem as stated, express the running time (as a function of $n$) of your algorithm using $\Theta$-notation.

3. Express the running time (as a function of $n$) of the following pseudo-code algorithms using $\Theta$-notation.

   ```
   r = 0
   i = n*n
   while i > 1 do
       for j = 1 to i do
           r = r + 1
       i = i/2
   ```

   Please note: $i/2$ is $\lfloor i/2 \rfloor$, the integer part of $i/2$.

4. CLRS, 3-2

5. CLRS, 3-4 (a), (b), (g), (h)
**Bonus**

You are given a large supply of one hour fuses for explosives. They are essentially pieces of string each of them guaranteed to burn for precisely one hour. They are of varying length since a fuse does not burn at the same rate all of the time, i.e., a piece of fuse might burn quickly for some time and then slowly, etc., varying any number of times in one hour. You do not have a watch or access to any timing device. You have discovered a way to blow me up but for the plan to be successful you need a fuse that burns for precisely twenty-two minutes and thirty seconds. How do you do it?