CSE 361S Intro to Systems Software
Assignment #2

Due: Thursday, Oct. 8, 2009.

1. B&O p. 100: problem 2.43. Contemplate the ! operator carefully and you will have no trouble with this problem.


5. Memory addressing.
   a. What is the benefit of using a segment:offset pair to represent a memory address, instead of just using the absolute address?
   b. When fetching instructions from memory, from where is the segment address retrieved (assuming protected mode, 32-bit addressing)?
   c. When accessing operands in memory, from where is the segment address retrieved (again assuming protected mode, 32-bit addressing)?
   d. What are the absolute addresses for the following segment:offset pairs?
      
      00B27FC4:5A03D94E  
      B17E532C:0076C89A  

   e. Are segment and offset addresses uniquely determined by an absolute address? If so, give the unique segment and offset address for the absolute address 0x9a207b4e8. Otherwise, give two segment and offset address pairs for that address.

   a. How many iterations will the following C code execute when start is 26? When start is 14? When start is 10?
      
      for (i = start; i > 10; i--) {
          /* additional code here ... */
      }

   b. How many iterations will the following assembly code execute when %eax is 16? When %eax is 8? When %eax is 0? (Warning: trick question!)

      loop_label:
      
      cmp $0, %eax
      jne loop_exit
      /* additional code here ... */
      subl $1, %eax
      jmp loop_label

      loop_exit: