Assignment # 1

Due Wednesday January 16th

Read Chapter 1 to get a feel of what the course is about, Appendix A, Chapter 5 Section 1, and Chapter 2 Sections 1 and 2.

Familiarize yourself with the CSE 370 web pages. In particular check out the pages relative to DesignWorks (don't read the whole manual!).

If you have not done so already, add yourself to the class mailing list using majordomo.

Written Assignment to be turned in.

If the problems refer to Chapters, they are from Katz's book.

1. Chapter 1. Exercise 6 page 37.
2. This problem is on conversions to/from various bases
   (a) Convert the unsigned binary number $(101001)_2$ to decimal, octal and hexadecimal
   (b) Convert the decimal number 37 to binary
   (c) Convert the decimal number 37.625 to binary
   (d) Convert the hexadecimal number $A36_{16}$ to octal and decimal
3. $A = 011010_2, B = 100001_2, C = 1101_2$ are unsigned binary numbers. Calculate: $A + B, B - A, A \times C$
4. Consider the two decimal numbers x = +6 and y = -4
   - Give their representation in 2's complement in a 4-bit system
   - Give their representation in 2's complement in a 8-bit system. What "rule" can you deduce to extend the representation of 2's complement numbers from an n-bit system to an m-bit system when m > n?
   - Perform the following operations in binary for the 4-bit 2's complement representations of x and y. If there is an overflow, indicate how it was detected
     (a) x + y
     (b) x - y
     (c) y - x

5. What are the largest and smallest binary numbers (integers) that can be expressed using (i) 32 bits with no sign bit, and (ii) 32 bits with signed-2's complement? Express your answers in decimal. (*Note: you may use a calculator for this question.)*

6. Chapter 2 Exercises 2.1(c), 2.1(d)

7. Chapter 2 Exercise 2.3