CS 140: Intro to Computer Science, Fall 2011
Homework 3

Due (in class or via email) by 1pm on Monday, Sept. 26 2011

1. Convert the following numbers to 10's complement. Use as many digits as are necessary to represent the number.

   (a) 645

   (b) -26

   (c) -3452

2. Convert the following numbers to binary, and then give their 2's complement representation.

   (a) 43

   (b) -5

   (c) -21

3. Evaluate the following expressions using 2's complement, where A and B are the following (positive) binary nubmers: $A = 11111110$ and $B = 00000010$.

   (a) $A + B$

   (b) $-B$

   (c) $A - B$

   (d) $B - A$

4. How many bits would be needed to represent a character set which contains 51 characters? How about a character set with 293 characters?

5. Exercises 55 and 56 from Chapter 4 (on page 115).

6. Exercises 59 and 62 from Chapter 4 (on page 115).

7. Extra Credit: Draw a circuit which adds two three-bit binary numbers. (Hint: Use the adders and half adders described in the text.)