Assignment 1

25 January 2013

due Monday 4 February in class

Write your answers to the following questions. For full credit, show all calculations. Submit your work on paper in class.

1. What are the values of each of the columns for a four-digit number in base 6?

2. Convert the following base 6 numbers into base 10.
   a. 342_6 =
   b. 254_6 =
   c. 1425_6 =

3. Convert the following base 10 numbers into base 6.
   a. 318_{10} =
   b. 626_{10} =
   c. 55_{10} =

4. Convert the following base 10 numbers into binary (base 2).
   a. 37_{10} =
   b. 55_{10} =
   c. 14_{10} =
   d. 63_{10} =

5. Convert the following binary (base 2) numbers into base 10.

   a. 1011_2 =

   b. 10_2 =

   c. 1110_2 =

   d. 10101_2 =

6. Choose any base you like, from the range 3–15. Show the symbols you'll use for each digit, and the values (in base 10) of each column in a five-digit number. Then convert the number 3278_{10} into your chosen base.

7. Convert the following positive and negative base 10 numbers into 6-bit two's-complement binary (base 2).

   a. 29_{10} =

   b. -32_{10} =

   c. -17_{10} =

   d. -1_{10} =

8. Convert the following binary numbers into hexadecimal.
   a. 01101011_2 =
   b. 10011111_2 =
   c. 111010011101_2 =
   d. 1010100110_2 =

9. Convert the following hexadecimal numbers into binary.
   a. $C4E_{16}$ =
   b. $1F0_{16}$ =
   c. $B7A_{16}$ =
   d. 718_{16} =