Assignment 1

(**Due date: 5/31/2011, Tuesday, in class**)

(Full Score: **100** points)

Your name:	Grade:

Important notice on how to submit and grade this assignment:
- Write your answers on **different papers** from the question sheets; otherwise, they will **NOT** be graded.
- You do **NOT** have to write the question text, but you need to **write the question number** for each question.
- Put your solutions in the **same order** as the questions appear on the assignment; otherwise, **missed or misplaced** solutions will **NOT** be graded.
- **How to Grade:**
  - The total score for the assignment is **100** points.
  - **An extra 8%** will be added to the **TYPEWRITTEN** submissions.
  - **2 points will be deducted** from your total score if you **missed any ONE** of the following (this is a *cumulative penalty*, e.g., 6 points will be taken for 1 missed name and 2 missed required blank lines):
    - **Your name** and **assignment number** on the top of each solution sheet/paper,
    - At least **one blank line** between solutions of adjacent questions (**except for** those of *Multiple Choice* or *True/False* questions).

The following questions are taken from the textbook Chapter 2 (p. 47-50).
- ❖ **For questions 6 through 11, using A, B, C, D, E, or F as your answers** for each of these questions (you may write text solutions alongside these A, B, …F). **50%** will be deducted if your solutions are **NOT** one of these A, B, …F (even though your texts give the correct answers).

- ❖ Do **NOT use any calculators** for the conversion/calculation questions.

- For Exercises 6—11, match the solution (**A, B, C, D, E,** or **F**) with the problem:

  A. 10001100
  B. 10011110
  C. 1101010
  D. 1100000
  E. 1010001
  F. 1111000

   6.   1110011 + 11001 (binary addition)

   7.   1010101 + 10101 (binary addition)

   8.   1111111 + 11111 (binary addition)

   9.   1111111 – 111 (binary subtraction)

   10.   1100111 – 111 (binary subtraction)

   11.   1010110 – 101 (binary subtraction)

- For Exercises 12-17, mark the answers (**T/true or F/false**) for the following questions:

   12. Binary numbers are important in computing because a binary number can be converted into every other base.

   13. Binary numbers can be read off in hexadecimal but not in octal.

   14. Starting from left to right, every grouping of four binary digits can be read as one hexadecimal digit.

   15. A byte is made up of six binary digits.

   16. Two hexadecimal digits can be stored in one byte.

   17. Reading octal digits off as binary produces the same result whether read from right to left or left to right.

- **24**. Explain how base 2 and base 8 are related.

- **25**. Explain how base 8 and base 16 are related.

- **26** and **27.** Expand the following table to include the **decimals** and **hexadecimals** from 11 through 16 (in one table).

Binary	Octal	Decimal
0	0	0
1	1	1
10	2	2
11	3	3
100	4	4
101	5	5
110	6	6
111	7	7
1000	10	8
1001	11	9
1010	12	10

- **28**. Convert the following binary numbers to octal.

   a. 111110110

         b. 1000001

         c. 10000010

         d. 1100010

- **29**. Convert the following binary numbers to hexadecimal.

    a. 10101001

    b. 11100111

    c. 01101110

    d. 01121111

- **30**. Convert the following hexadecimal numbers to octal.

    a. A9

    b. E7

    C. 6E

- 31. Convert the following octal numbers to hexadecimal.

    a. 777

    b. 605

    c. 443

    d. 521

    e. 1

- **33**. Convert the following decimal numbers to binary.

    a. 45

    b. 69

    c. 1066

    d. 99

    e. 1

- **32**. Convert the following decimal numbers to octal.

    a. 901

    b. 321

    c. 1492

    d. 1066

    e. 2001

- **34**. Convert the following decimal numbers to hexadecimal.

    a. 1066

    b. 1939

    c. 1

    d. 998

    e. 43

- **37.** Perform the following octal additions
    a. 770 + 665
    b. 101 + 707
    c. 202 + 667

- **38**. Perform the following hexadecimal additions
    a. 19AB6 + 43
    b. AE9 + F
    c. 1066 + ABCD

- **40.** Perform the following hexadecimal subtractions.
    a. ABC – 111
    b. 9988 – AB
    c. A9F8 – 1492