

Assignment 1
(Due date: 9/16/2009, Wednesday, in class)

Your name:	Grade:
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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.
 - **3 points will be deducted** from your total score if you **missed any ONE** of the following (this is a *cumulative penalty*, e.g., 9 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. (Bonus, 5 points)** Convert the following decimal numbers to octal.
 - a. 901
 - b. 321
 - c. 1492
 - d. 1066
 - e. 2001
- **34. (Bonus, 5 points)** Convert the following decimal numbers to hexadecimal.
 - a. 1066
 - b. 1939
 - c. 1
 - d. 998
 - e. 43