CS 354 - FALL 1994
Assignment 3

Grader: Vaishnavi Anjur
SOLUTIONS

1 Problem 1

- (15 points, 1point each entry) Fill in the missing entries in the following table. All entries within a line represent the same value.

binary	octal	hexadecimal	decimal
11000	30	18	24
110010101	625	195	405
11000100101	3045	625	1573
10010101110	2256	4ae	1198
11110001	361	f1	241

2 Problem 2

- (9 points) Give the base 2, base 3 and base 4 representations for the decimal number 25.8. Calculate the first four digits beyond the radix point.
- base 2 11001.1100.. (1100 is the repeating part)
- base 3 221.2101.. (2101 is the repeating part)
- base 4 121.3030... (30 is the repeating part)

3 Problem 3

- (6 points, 2 each part) Find the additive inverse of the following 8-bit values, presuming the indicated representation. :
  - a) 00110011 (two's complement) Ans: 11001101
  - b) 11001100 (sign magnitude) Ans: 01001100
  - c) 11110000 (one's complement) Ans: 00001111

4 Problem 4

- (20 points, 1 point each entry) Fill in the missing entries in the following table. All entries within a line represent the same value. Make each entry an 8-bit representation. If an entry cannot be represented in eight bits, write a '*' for that entry.

unsigned	sign magnitude	1's complement	2's complement	biased-64
10000000	*	*	*	11000000
00000000	10000000	11111111 or 00000000	00000000	01000000
00110011	00110011	00110011	00110011	01110011
*	11010110	10101001	10101010	*
*	10110001	11001110	11001111	00001111

5 Problem 5

- (6 points, 2 each part) In this question, a subscript indicates the base of the representation. For each part, find the missing value of the base.
- a. $217_{10} = 1332_x, x = 5$
- b. $102_{10} = 146_y, y = 8$
- c. $358_{10} = 166_z, z = 16$