

CS309 Spring 2010 Homework Assignment 1. Due 25 Jan

1. $(63012)_{10} = (?)_2$ (Use 3 bits for the fractional part)

2. $(110101.11)_2 = (?)_{10}$

3. What is x if $2^x = 64K$?

4. Perform the following binary arithmetic. Assume 2 bits for the fractional part.

$$(11010)_2 + (1011)_2 = (?)_2$$

$$(100001)_2 - (110)_2 = (?)_2$$

$$(1010)_2 \times (1101)_2 = (?)_2$$

$$(110101)_2 / (101)_2 = (?)_2$$

5. Write $(266)_8$ in hex, binary, and decimal

6. $(44)_5 = (?)_7$

7. (a) Calculate $17_{10} + 4_{10}$ using a 2's Complement Number System with 5 magnitude bits

(b) Repeat (a) using a 1's complement number system with 5 magnitude bits

(c) Assume you add the positive decimal integers A and B using a 2's Complement Number System with 4 magnitude bits. How large can A and B be without producing an overflow?

8. Write $(474)_8$ in BCD

9. Perform $27_{10} + 94_{10}$ using BCD arithmetic.