

EE 2720, Fall 2011

Homework #1

Due Monday Sept. 19, 2011 in class

Note: Please STAPLE your homework.

Problem 1: Find the value of the unsigned binary number 10111010.011_2

Problem 2: Convert into octal the following binary number 1101010011.11_2

Problem 3: Convert into binary the following octal number 6437.37_8

Problem 4: Convert into hexadecimal the following binary number 1101010011.11_2

Problem 5: Convert into binary the following hexadecimal number $97D.B8_{16}$

Problem 6: Convert 153.75_{10} into binary.

Problem 7: Convert 0.7_{10} into binary.

What do you observe?

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Problem 8: What is the Dynamic Range (DR) of a 9-bit integer binary unsigned system?

Problem 9: Compute $X+Y$ where X and Y are the following 6-bit binary unsigned numbers: $X = 101011_2 = 43_{10}$; $Y = 010010_2 = 18_{10}$. When you do the addition show all the carries. Do you have an overflow in this case? Justify your answer.

Problem 10: Repeat problem 9 with $X = 101111_2 = 47_{10}$; $Y = 010111_2 = 23_{10}$

Problem 11: What is the Dynamic Range (DR) of an 8-bit integer binary signed-magnitude system?

Problem 12: Find the 10's complement of the number 46957_{10} . Use both ways for finding the 10's complement of a number provided in handout #2

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Problem 13: What is the Dynamic Range (DR) of a 10-bit integer binary two's-complement system?

Problem 14: Using the lemma on page 13 of handout #2 find the value of the following two's-complement number: ~~1010~~ $X = 10100110_2$

Problem 15: Find the two's-complement of the number $X = 10101010_2$.

Problem 16: Using the two's-complement system perform $X - Y$ where $X = 101001_2 = -23_{10}$ and $Y = 000110_2 = +6_{10}$.