

CSE 260M - Homework 1

Always show all work for full credit.

1. Determine the largest (closest to $+\infty$) & smallest (closest to $-\infty$) values (in decimal) that can be represented with 9-bit number for each representation:

a. Sign/magnitude

Largest:

Smallest:

b. Unsigned

Largest:

Smallest:

c. Two's complement

Largest:

Smallest:

2. Fill in the missing values in the following table:

Binary	Decimal	Hex
	42	
	312	
		EE
		80

3. Convert the following numbers to 8-bit, two's complement:

a. 59

b. -47

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4. Convert the following 8-bit, two's complement numbers to decimal:

a. 0011 0101

b. 1110 1010

5. Perform the following additions of two's complement numbers (show work):

a. 1001 0111
+ 0011 0010

b. 0010 0101
+ 0100 0011

c. 0111 1111
+ 0000 0001

6. Exercise 1.73 from the text: "A majority gate produces a TRUE output if and only if more than half of its inputs are TRUE. Complete a truth table for the three-input majority gate shown in Figure 1.42."

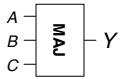


Figure 1.42

7. Convert the following 8-bit two's complement numbers to 16-bit two's complement numbers with the same value.

a. 0010 1101

b. 1110 1001