

About how many hours did you spend actively working on this assignment? \_\_\_\_\_

**1. Minima and Maxima**

a.	b.
c.	d.

**2. Two's complement conversions**

Decimal to 8-bit two's complement representation	16-bit two-complement representation to decimal
$107_{10} =$	$0x5F8C =$
$-107_{10} =$	$0xCAFE =$

**3. Unsigned arithmetic**

$$\begin{array}{r} 00101101 \\ + 01101111 \\ \hline \end{array}$$

Sum<sub>2</sub> =

Overflow?

(circle one)      yes    no

$$\begin{array}{r} 11111111 \\ + 11111111 \\ \hline \end{array}$$

yes    no

$$\begin{array}{r} 00000000 \\ - 11111111 \\ \hline \end{array}$$

yes    no

**4. Two's complement arithmetic**

$$\begin{array}{r} 00101101 \\ + 01101111 \\ \hline \end{array}$$

Sum<sub>2</sub> =

Overflow?

(circle one)      yes    no

$$\begin{array}{r} 11111111 \\ + 11111111 \\ \hline \end{array}$$

yes    no

$$\begin{array}{r} 00000000 \\ - 11111111 \\ \hline \end{array}$$

yes    no

### 5. CSAPP3e Homework Problem 2.77

5a. $x * 17$	
5b. $x * -7$	
5c. $x * 60$	
5d. $x * -112$	

### 6. CSAPP3e Homework Problem 2.82

6a. $(x < y) == (-x > -y)$ Why? (Brief description or counterexample)	Circle one: yes no
6b. $((x + y) << 4) + y - x == 17 * y + 15 * x$ Why? (Brief description or counterexample)	Circle one: yes no

6c.  $\sim x + \sim y + 1 == \sim(x + y)$   
Why? (Brief description or counterexample)

Circle one: yes no

6d.  $(ux - uy) == -(\text{unsigned})(y - x)$   
Why? (Brief description or counterexample)

Circle one: yes no

6e.  $((x \gg 2) \ll 2) \leq x$   
Why? (Brief description or counterexample)

Circle one: yes no

## 7. Absolute Value

7a. Argument decimal notation	7b. Argument binary representation
7c. Return value decimal notation	7d. Return value binary representation

7e. Explain error.

7f. (Challenge) Fix function.