

- I. (12 points) Complete the following table. Decimal Unsigned is the value if the binary number is considered unsigned. Decimal Signed is the value if the binary number is considered two's complement encoded.

	Hexadecimal	8-Bit Binary	Decimal Unsigned	Decimal Signed
Example:	0xA5	10100101	165	-91
1.	0x8F	10001111	143	-113
2.	0x2E	00101110	46	46
3.	0x4D	01001101	77	77
4.	0xB3	10110011	179	-77

- II. (2 points each) For questions 5 and 6, perform the indicated calculations, writing the answer in binary below each line.

$$\begin{array}{r}
 5. \quad \begin{array}{r} 10100101 \\ + 01011011 \\ \hline 00000000 \end{array}
 \end{array}$$

$$\begin{array}{r}
 6. \quad \begin{array}{r} 01110011 \\ + 00001111 \\ \hline 10000010 \end{array}
 \end{array}$$

- III. (1 point each) Fill in the blank.

7. (1 point) In a computer system, the CPU, memory, I/O devices communicate with each other over a Bus
8. (1 point) If all the binary values in question 6 were encoded as two's complement, what is the result? Overflow

IV. (2 points total) Complete the table as indicated.

9. The value 0xC0DECAFE is stored to address 0xFFFF1110 in two different computer systems. One computer system is big endian, while the other system is little endian. Complete the following memory map of both systems, writing all answers in hexadecimal.

Memory Address	Big Endian System Value	Little Endian System Value
0xFFFF1110	0xC0	0xFE
0xFFFF1111	0xDE	0xCA
0xFFFF1112	0xCA	0xDE
0xFFFF1113	0xFE	0xC0