Practice Problem 2.17 (solution page 184)

Assuming $w = 4$, we can assign a numeric value to each possible hexadecimal digit, assuming either an unsigned or a two's-complement interpretation. Fill in the following table according to these interpretations by writing out the nonzero powers of 2 in the summations shown in Equations 2.1 and 2.3:

$\vec{x}$		$B2U_4(\vec{x})$	$B2T_4(\vec{x})$
Hexadecimal	Binary		
0xA	[1010]	$2^3 + 2^1 = 10$	$-2^3 + 2^1 = -6$
0x1	0001	$2^0 = 1$	$2^0 = 1$
0xB	1011	$2^3 + 2^1 + 2^0 = 11$	$-2^3 + 2^1 + 2^0 = -5$
0x2	0010	$2^1 = 2$	$2^1 = 2$
0x7	0111	$2^2 + 2^1 + 2^0 = 5$	$2^2 + 2^1 + 2^0 = 5$
0xC	1100	$2^3 + 2^2 = 12$	$-2^3 + 2^2 = -4$

Hex digit	0	1	2	3	4	5	6	7
Decimal value	0	1	2	3	4	5	6	7
Binary value	0000	0001	0010	0011	0100	0101	0110	0111

Hex digit	8	9	A	B	C	D	E	F
Decimal value	8	9	10	11	12	13	14	15
Binary value	1000	1001	1010	1011	1100	1101	1110	1111

Figure 2.2 **Hexadecimal notation.** Each hex digit encodes one of 16 values.