Tuesday Reading Assessment: Chapter 2-1 through 2-7

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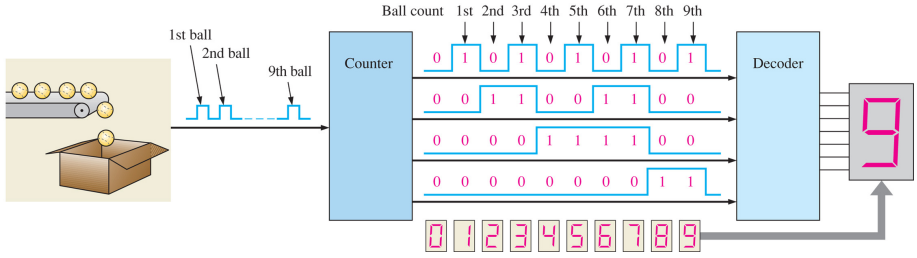

TABLE 2–2

Binary weights.

Positive Powers of Two (Whole Numbers)									Negative Powers of Two (Fractional Number)					
2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0	2^{-1}	2^{-2}	2^{-3}	2^{-4}	2^{-5}	2^{-6}
256	128	64	32	16	8	4	2	1	1/2 0.5	1/4 0.25	1/8 0.125	1/16 0.625	1/32 0.03125	1/64 0.015625

Figure 1: (Top) A sensor provides digital pulses to a counter with four outputs. (Bottom) A conversion table for binary weights.

1 Binary to Decimal, Decimal to Binary, 2's complement, Addition

1. Considering Fig. 1 (bottom), convert the following binary numbers to decimal:
   - 1000
   - 1010
   - 1011
   - 1111
2. Using repeated division by 2 method, convert the following decimal numbers to binary:
   - 255
   - 44
   - 64
   - 31
3. What is the 2's complement of 125 in binary?
4. What is 1101 + 1011, assuming these are binary numbers?
5. If the counter in Fig. 1 (top) takes 18 seconds to reach 1001, how many seconds per count?