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Fourth Edition, by John F. Wakerly, ISBN 0-13-186389-4.

3e2.2 2.201 Convert the following octal numbers into binary and hexadecimal:

(a) $1023_8 = ?_2 = ?_{16}$

(b) $761302_8 = ?_2 = ?_{16}$

(c) $163417_8 = ?_2 = ?_{16}$

(d) $552273_8 = ?_2 = ?_{16}$

(e) $5436.15_8 = ?_2 = ?_{16}$

(f) $13705.207_8 = ?_2 = ?_{16}$

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3e2.4 2.202 What are the octal values of the four 8-bit bytes in the 32-bit number with octal representation 12345670123_8 ?

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2.203 Add the following pairs of binary numbers, showing all carries:

3e2.7

$$\begin{array}{r} \text{(a)} \quad 110101 \\ + \quad 11001 \\ \hline \end{array} \quad \begin{array}{r} \text{(b)} \quad 101110 \\ + \quad 100101 \\ \hline \end{array} \quad \begin{array}{r} \text{(c)} \quad 11011101 \\ + \quad 1100011 \\ \hline \end{array} \quad \begin{array}{r} \text{(d)} \quad 1110010 \\ + \quad 1101101 \\ \hline \end{array}$$

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3e2.8

2.204 Repeat Drill 2.203 using subtraction instead of addition, and showing borrows instead of carries.

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2.205 Add the following pairs of octal numbers:

3e2.9

$$\begin{array}{r} \text{(a)} \quad 1372 \\ + \quad 4631 \\ \hline \end{array} \quad \begin{array}{r} \text{(b)} \quad 47135 \\ + \quad 5125 \\ \hline \end{array} \quad \begin{array}{r} \text{(c)} \quad 175214 \\ + \quad 152405 \\ \hline \end{array} \quad \begin{array}{r} \text{(d)} \quad 110321 \\ + \quad 56573 \\ \hline \end{array}$$

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3e2.10 2.206 Add the following pairs of hexadecimal numbers:

$$\begin{array}{r} \text{(a)} \quad 1372 \\ + \quad 4631 \\ \hline \end{array} \quad \begin{array}{r} \text{(b)} \quad 4F1A5 \\ + \quad B8D5 \\ \hline \end{array} \quad \begin{array}{r} \text{(c)} \quad F35B \\ + \quad 27E6 \\ \hline \end{array} \quad \begin{array}{r} \text{(d)} \quad 1B90F \\ + \quad C44E \\ \hline \end{array}$$

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2.207 Write the 8-bit signed-magnitude, two's-complement, and ones'-complement representations for each of these decimal numbers: +18, +115, +79, -49, -3, -100. 3e2.11

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3e2.12 2.208 Indicate whether or not overflow occurs when adding the following 8-bit two's-complement numbers:

$$\begin{array}{r} \text{(a)} \quad 11010100 \\ + 10101011 \\ \hline \end{array} \quad \begin{array}{r} \text{(b)} \quad 10111001 \\ + 11010110 \\ \hline \end{array} \quad \begin{array}{r} \text{(c)} \quad 01011101 \\ + 00100001 \\ \hline \end{array} \quad \begin{array}{r} \text{(d)} \quad 00100110 \\ + 01011010 \\ \hline \end{array}$$

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3e2.13 2.209 How many errors can be detected by a code with minimum distance d ?

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3e2.15 2.210 Here's a problem to whet your appetite. What is the hexadecimal equivalent of 61453_{10} ?

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- 3e2.30 2.211 Show how to subtract BCD numbers, by stating the rules for generating borrows and applying a correction factor. Show how your rules apply to each of the following subtractions: $9 - 3$, $5 - 7$, $4 - 9$, $1 - 8$.

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- 3e2.31 2.212 How many different 3-bit binary state encodings are possible for the traffic-light controller of Table 2-12?