EXERCISE

Binary to Decimal Conversion

1. Convert the following 8-bit numbers from binary to decimal.
    a. 00011110_2
    b. 10000101_2
    c. 11011011_2
    d. 01101001_2
2. Determine whether the following statements are true or false.
    a. $1000_2 < 4_{10}$
    b. $0111_2 = 0\ 111_{10}$
    c. $0010_2 > 3_{10}$
    d. $1001_2 > 1101_2$
3. Convert the following numbers to their binary equivalents.
    a. 25_{10}
    b. 37_{10}
    c. 55_{10}
    d. 400_{10}
    e. 547_{10}

Converting Fr*actions*

4. Convert the following numbers to their binary equivalents.
    a. 26.75_{10}
    b. 37.375_{10}
    c. 59.625_{10}
    d. 63.125_{10}
    e. 78.875_{10}

5. Use the 32-bit floating representation to represent the binary numbers you have got from the previous question and show how it will be represented in the memory .

6. Convert the following decimal numbers to binary. Work until you are sure your binary answer is repeating.
    a. 0.2_{10}
    b. 0.3_{10}
    c. 0.4_{10}

Adding Two Binary Numbers

7. Add the following 8-bit binary numbers.
    a. $11010011_2 + 01010110_2$
    b. $10010011_2 + 10111001_2$
    c. $11111110_2 + 11110101_2$

Two's Complement

8. Convert the following decimal numbers to binary using 8-bit 2's complement representation.
    1. -32_{10}
    2. 13_{10}
    3. -5_{10}
    4. -20_{10}
    5. 36_{10}
    6. -23_{10}

Subtraction with Two's Complement

9. Solve each of the following 8-bit subtraction problems using 2's complement representation.
    a. $01111111_2 - 76_{10}$
    b. $00110010_2 - 125_{10}$
    c. $01011001_2 - 111_{10}$
    d. $00001111_2 - 35_{10}$

Hexadecimal and Octal Numbers

10. Convert the following numbers to decimal.
    a. 72_8
    b. 72_{16}
    c. $DE1_{16}$
    d. 11001_8
    e. ACE_{16}
    f. 1001_{16}
    g. 37.7_8

h. $B2.F_{16}$

ASCII Code Representation

11. Using the even parity bit to represent the following sentence in memory(Hexadecimal)?

    Welcome to C .