Data Representation Assignment.

Simple Binary Representation

1. Convert the following numbers from decimal to binary
    a. 42
    b. 103
    c. 1024
    d. 20.17

2. Convert the following numbers from binary to decimal
    a. 110011
    b. 111111111
    c. 1001.1001
    d. 1.111...(infinitely repeating)

3. Prove that a binary number with finite number of bits (before and after the binary point) can be represented in decimal with finite number of digits.

2's Complement

1. Explain how you will convert an n-bit number into its n-bit 2's complement form.

2. Convert the following number into 8-bit 2's complement form.
    a. 100
    b. 127
    c. -35
    d. -128

3. What are the largest and the smallest numbers that can be represented using n-bit 2's complement?

Floating point

1. Convert the following numbers to floating point.
    a. 20.17
    b. 10.3

2. Explain how you will convert a 32-bit unsigned integer into 32-bit floating point.

3. How will you compare two floating point numbers (assume they are not infinity or Not-a-number)?