HW1

- Due Jan 22 by 5pm
- Points 100
- Submitting a file upload
- File Types pdf, docx, lst, and asm
- Available Jan 13 at 8am - Jan 29 at 5pm

This assignment was locked Jan 29 at 5pm.

HW # 1: Theme: Binary Number Representations (Prerequisites)

All main questions are of equal weight.

(Credit awarded to only those answers that show work)

1. What is the decimal representation of each of the binary integers below: assume (1) and (2) are signed and (3) is unsigned?
    1. 1111 1011
    2. 0110 0100
    3. 1001 1010
2. What is the minimum number of binary bits needed to represent each of the following decimal numbers?
    1. 65437
    2. 10361
        - Hint:

          A positive integer *n* has ***b*** bits when $2^{b-1} \le n \le 2^{\mathbf{b}} - 1$. For example:

          29 has **5** bits because $16 \le 29 \le 31$, or $2^4 \le 29 \le 2^{\mathbf{5}} - 1$
3. What is the hexadecimal representation of each of the following binary numbers?
    1. 1011 1001 1001 1100
    2. 1101 0110 0111 0011
    3. 0011 0110 0001 1001

4. What is the decimal value of the following representation of each hex integer below—assume they use unsigned notation?
    1. 4024
    2. FEE
    3. 10F3
5. What is the 16-bit hexadecimal representation of each decimal integer?
    1. –619
    2. –312
    3. +1947
6. What is the 8-bit binary (2's complement) representation of each of the decimal integers?
    1. –35
    2. +103
    3. –114

7. Write the ASCII code for the string "ROSE". The answer should provide ASCII (in hexadecimal) corresponding to each letter in the string. The ASCII values can be found on the inner cover of the book.

8. What is the range of decimal values that can be represented by:
    1. 7-bit unsigned integer?
    2. 7-bit signed integer?