Week 1 Practice Exercises

<u>Remark</u>: For the sake of easy reading and minimizing errors in writing bits, it is recommended that we write bits in group of four and separate them with spaces. Example: Instead of writing 10011101, it is better to write it is 1001 1101.

1. Convert the decimal numbers 125, 87 and 177 to binary as unsigned binary numbers.

2. Express the unsigned binary representation of the integers 125, 87 and 177 as bytes.

3. What are the decimal numbers represented by the unsigned binary numbers **10 0101**, **0000**, and **1 0101 0111**

4. Find the sign and magnitude representations of the integers -125, 343 and 87 as Bytes.

5. Find the two's complement representations of the integers -125, 343, 128 and -128, 87, -87 as Bytes.

6. Convert the following two's complement Byte patterns to decimal: **1000 0000, 1010 1001,** and **0101 0111**

7. Perform the operation 125 – 87, -128 + 37 and -87 – 37 in two's complement using a Byte pattern and show that your answer is consistent with what we would expect if the arithmetic is performed in decimal.
8. Given the binary 1101 1100 0100 1111 0111 1011, write it in Hexadecimal format.
9. Given the Hexadecimal A68D4F, write it as binary.
10. Given the decimal 173. Write it down as unsigned binary in a Byte. Also write it down as Hexadecimal.
11. Given the Byte binary 1101 0011. What value does it represent if it is
    a. Unsigned binary?
    b. Sign and Magnitude binary?
    c. Two's complement binary?
    d. Ascii code?