LAB #1

Purpose:

The purpose of this first lab is to practice binary conversions and do a simple submission using D2L/Brightspace.

Before the lab:

1. Read the User's Guide to DCS Facilities for the instructions on how to log on to the workstations in the ENG building.
2. Read the 'LAB USER GUIDE HANDOUT' (the last link in the menu to the left of the screen).

During the lab:

Do items 1 to 9. Write your answers on a piece of paper and show them to your lab assistant. Do the conversions using pencil and paper only (on the final exam you will not have access to computers or calculators).

1. What are the decimal equivalents of the following bit sequences (IEEE754 floating point)?
   1100 0010 1110 0000 0000 0000 0000 0000
   0100 0000 1000 0000 0000 0000 0000 0000
   1100 0000 1000 0000 0000 0000 0000 0000

2. What are the decimal equivalents of the following bit sequences (unsigned integer)?
   0000 0000 0000 0000 0000 1111 0000 0001
   0000 0000 0000 0000 0000 0000 0000 0000
   0000 0000 0000 0000 0000 0000 0001 0001
   0000 0000 0000 0000 0000 0000 0000 1111

3. What are the binary equivalents of the following decimal numbers (signed integer - 2s complement)?
   157 ; 205 ; -150 ; -55 ; -3 ; 65

4. What are the binary equivalents of the following decimal numbers (IEEE 754 floating point)?
   14.0 ; 32.0 ; -3.0 ; 128.0; -6.0 ; -15.0

5. What are the hexadecimal equivalents of the following bit sequences?

1010 0000 1011 0010 1100 0011 1110 0101
1111 1010 1010 0001 0101 0111 1110 1000

6. What are the binary equivalents of the following hexadecimal numbers?
   66CCFF ; 3366FF ; FFFFFF ; 123456 ; ABCDEF;

7. What are the decimal equivalents of the following hexadecimal numbers?
   336699 ; FFCC22 ; 345678 ; 999999 ; 000000;

8. What are the hexadecimal equivalents of the following decimal numbers?
   44 ; 622 ; 1567 ; 1000 ; 677;

9. Write the answers to questions 1 to 8 in a text file and submit that text file on D2L/Brightspace under Lab #1. Submissions are due at the end of the lab session. You must submit your work before leaving the lab.

After the lab:

1. Review the steps you took to perform the various operations in the lab. If you did not have time to finish all excercises, finish them at home and validate your answers on this website (but not before you have done the conversions by hand!).

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