CS1203 Assignment 4

Fall 2020

Due **Monday October 12th** before **4pm Atlantic** in the Desire2Learn dropbox.

Note: All answers need to be contained in a single document using a word processor. For answers that require work to be shown you may choose to take a picture or scan your work and insert the image into the document in the correct order (your answers need to be labelled with the question number and appear in the correct order). Make sure all handwritten work can be easily read. The first page of the document must be a title page (see sample posted in D2L). Once you have finished your document, save the document as a PDF file. **Submit the PDF file** to the appropriate drop box on Desire2Learn. Name your document as follows:
CS1203_YourName_A4

1. How many different representations can we produce with:
    a. four bits
    b. seven bits

2. Convert the following real numbers to binary (6 binary places).
    a. 7.50
    b. 3.25
    c. 2.10

3. Convert the following unsigned binary representations to base 10:
    a. 10110.11011
    b. 10011.100101

4. Represent -13.65625 base 10 in binary using the sign, mantissa, and exponent formula (sign * mantissa * 2^exponet). **Show your work for this question to receive full marks.**

5. Describe the differences between keyword encoding and run-length encoding.

6. What is the minimum number of bits we would need to represent a character set containing 56 characters?

7. In Huffman encoding the number of bits used to represent each character vary. Explain how we are able to decode a word written in binary using Huffman encoding if we do not know how many bits are used for each character.

8. What is the main difference between the ASCII and Unicode character sets?

9. What is the sampling rate per second that is enough to create reasonable sound reproduction?

10. What color does a RGB value of (0, 0, 0) represent?

11. What does an RGB value of (75, 255, 0) mean?

12. What is resolution?

13. Describe the two types of compression video codecs use.