CSCE 101 Homework 2

Answers can be found in the text—refer to syllabus for textbook information/details.

Many/most of these questions are exercises from Chapters 2, 3 and 4 of the text.

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1. Label the following numbers as natural, negative, or rational.
    a. 1.333333
    b. -1/3
    c. 1066
    d. 2/5
    e. 6.2
    f. π (pi)
2. Convert the following decimal numbers to binary.
    a. 45
    b. 69
    c. 1066
    d. 99
    e. 1

For exercises 3 - 8, mark the answers true or false.

3. *Lossless compression* means the data can be retrieved without losing any of the original information.
4. A computer represents information in an analog form.
5. Four bits can be used to represent 32 unique things.
6. Overflow occurs when the value that we compute cannot fit into the number of bits we have allocated for the result.
7. In the ASCII character set, no distinction is made between uppercase and lowercase letters.
8. The Unicode character set includes all of the characters in the ASCII character set.

9. Convert the following real numbers to binary (five binary places).
    a. 0.50
    b. 0.26
    c. 0.10
10. What does the code *X5*A9 represent using run-length encoding?
11. Draw a circuit diagram corresponding to the following Boolean expression: (A + B)(B+C)
12. Draw a circuit diagram corresponding to the following Boolean expression: A'B + (B + C)'
13. Differentiate between a half adder and a full adder