CSC 355 Fall 2015 Midterm Exam Objectives

In order to successfully complete this midterm exam, you need to be able to:

- List the outputs of AND, OR, NOR, NAND, gates and inverters.
    - Create a truth table that shows the output of a logical function, given all possible states of the inputs.
- Convert between decimal, binary, hexadecimal number systems.
- Add and Subtract in binary.
- Prove logical expressions using the rules of Boolean Algebra.
- Simplify logical expressions using the rules of Boolean Algebra.
- Simplify logical expressions using Karnaugh Maps:
    - Produce expressions that are minimal Sum of Products or Sum of Minterms
    - Produce expressions that are minimal Product of Sums or Product of Maxterms.
    - Be able to use 3, 4, and 5 variable maps
    - Be able to incorporate ‘don’t care’ states.
- Create minimal digital logic circuits that realize logical expressions:
    - Using a minimal number of any type of gates.
    - Using a minimal number of only 1 type of gate.
- Identify the fan-in and fan-out of all the gates in a circuit.
- Define the operation of the following combinatorial circuits:
    - Multiplexer
    - Half-Adder
    - Full-Adder