**CS 131 Review for Midterm Exam**

* **Exam date, time, location, what to bring:**
  + Thursday, March 3, 11am-12:20pm
  + CAS 224
  + Cheat sheet: up to 4 pages, handwritten or printed
* **Prepare:**
  + Review the topics and types of questions listed in the review document
  + Review homework assignments 1-4
  + Review lectures 1-9 (Bb and notes): clicker and general questions, examples
  + Cheat sheet
* **Topics:**
  + Propositional statements with ∧, ∨, ¬; quantifiers: ∀, ∃; →, ↔; variables x,y
    - Writing English, math, system specification statements in a logical form
    - Truth tables
    - Evaluating truth values
    - Equivalency formulas
    - Negation of statements
  + Sets
    - A⋂B
    - AUB
    - A\B
    - A⊆B
    - A=B
    - Disjoint sets
    - Empty set:
  + Set diagrams
    - Venn diagrams
    - Euler diagrams
  + Analyzing arguments for validity
    - using truth tables
    - using Euler diagrams
    - using valid/invalid argument forms
  + Programming paradigms
  + Logical programming
  + Proof strategies
    - for goals or givens containing
      * conditionals (if –then)
      * biconditionals (iff)
      * not
      * and
      * or
      * for all/for any
      * exists
      * existence and uniqueness
      * statements about sets (A⊆B, A=B, A and B are disjoint)
      * statements about real and integer numbers, a|b (a divides b), a%b
    - math induction
    - strong induction
* **Types/Format of the Exam Questions:**
  + True/False (clicker questions, general info)
  + Fill-in-the-blank (general info)
  + Translate a statement (containing and, or, not, for all, there is/are, necessary, sufficient, implies, follows, if and only if, calculus definition, leap year description, system specification) into logical form
  + Decide whether a statement is true or false. Explain your reasoning using the truth tables.
  + Simplify a propositional statement, using equivalency laws
  + Negate a propositional statement
  + Analyze an argument for validity (using truth tables, Euler diagrams, known forms of arguments)
  + Prove a statement. (Writing givens and goals is required; indicating a proof strategy that you are using is recommended.)