Administrative
- **Final Exam Schedule:**

    Lecture: TR 11:00am-12:15pm, 2111 Learned (21852)
    Final Exam: 12/12, Tuesday, 10:30am-1:00pm, 2111 Learned

    Lecture: TR 1:00pm–2:15pm, 2 Eaton (16569)
    Final Exam: 12/11, Monday, 1:30pm-4:00pm, 2 Eaton

Warning: Check your final exam schedule carefully. Any unauthorized absence from the final exam will result in a zero for the final exam. If you come in late after the exam has already begun, you will not be allowed any extra time to complete your exam.

Read carefully all of the following items....
- Bring your KUID. You will not be allowed to take the exam without your KUID.
- Sit as far apart in the room as possible. There should be at least one seat between everyone.
- Once you start the exam, you will not be excused from the room for any reason unless you turn in your exam. Once it is turned in, you cannot come back and continue working on it.
- Unless otherwise stated, all material from our lectures, discussions, reading assignments, practice homework, Connect and Written homework assignments are fair game for exams.
- The exam will be closed book and closed notes.
- No calculators, cell phones, head phones, or electronic devices of any sort will be allowed. No such devices should be out in the open.
- You must write legibly and show all your work clearly for credit. Partial credit will only be given to meaningful answers.
- You will be graded according to your approach to the problems, mathematical rigor, and quality of your solutions.

Exam Coverage
This is a comprehensive final examination and you are responsible for all topics covered in this course, including all materials in our lectures, discussions, and assignments. Although emphasis of this exam will be on the following topics, please be sure to re-examine and study all those topics covered in the first and second Exam Review Guides as posted earlier this semester.
- **Propositional Logic and General Proof Techniques**
- **Summations and Complexity of Algorithms**
- **Mathematical Induction**
    (1) Understand the structures and applications of first-form and second-form (strong) of inductions.
    (2) Given a universal quantification, be able to prove the validity of the given universal quantification using induction.
    (3) Understand and be able to transform a given universal quantification into its proper form so that induction can be applied.

- **Recursive Definitions and Recursive Algorithms**
    1. Understand the basic characteristics of recursive definition and recursive algorithm and be able to model real-world applications using recursive definitions and recurrence equations.
    2. Understand basic structures of recursive programming and be able to set up recurrence equation in analyzing its performance.
    3. Understand and be able to compute the value of a recursive function using forward evaluations.
    4. Understand and be able to compute the solution of a recurrence equation using the method of repeated substitutions.
    5. Understand and be able to verify the solution of a given recurrence equation using inductions.
    6. Understand and be able to compute the solution of a recursive complexity function using the method of repeated substitutions.
- **Counting Techniques and Their Applications:**
    1. Understand and be able to apply the Rule of Sum, Rule of Product, Pigeonhole Principles, Binomial Theorem, and the Principle of Inclusion and Exclusion to counting.
    2. Understand and be able to count the number of ordered, and unordered, selections, arrangements, and placements using permutations and combination.
    3. Understand and be able to perform multi-set counting using generalized permutation and combination.
    4. Understand and be able to apply different counting techniques to solve real-world problems.

12/1/17