Final Exam Review

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Midterm Exam

- **Exam will Open on Monday May 2nd at 8:00 am and will close on Wednesday May 4th at 11:00 pm**

- Exam will be online on Moodle

- You will have 120 minutes to complete it

- The exam is 44 questions (including subquestions)
  - 14 numerical
  - 23 short answer
  - 2 essay
  - 4 true/false
  - 1 multiple choice

- The exam is open book and open notes.

- **You may <u>NOT</u> consult the internet, other class members, or your friends**

ROAR

Things to Study

- Number Theory
  - Conversions between binary and hexadecimal and between binary and octal, in both directions
  - Using the Euclidean algorithm to find the gcd

- Counting
  - Sum, Product, and Subtraction Rules
  - Pigeon Hole principle and the General Pigeon Hole Principle
  - Permutations and Combinations
  - Binomial Theorem and Pascal's Identity

- Discrete Probability
  - Axioms of Probability
  - Conditional Probability
  - Independence
  - Review the Lottery and Card Examples

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Things to Study

- Relations
  - Reflexive, Symmetric, and Transitive Closures on a relation on a set.
  - Posets and Hasse Diagrams
    - Maximal and minimal elements
    - Greatest and Least elements
    - Upper and Least Upper Bounds
    - Lower and Greatest Lower Bounds
  - Topological Sorting
- Graphs
  - Isomorphism
  - Hamilton Circuits
  - Euler Circuits
  - Finding shortest paths in weighted graphs

Things to Study

- Trees
  - Tree traversals
  - Huffman coding
  - Spanning Trees and Minimum Spanning Trees
  - Basic Properties of a Tree
    - Size, Height, Root vertex, Internal Vertex, Leaves, children, ancestors, parents, siblings, descendants.
    - How to determine if a tree is full or not

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Are there any questions?