

COT3100 Exam 4 review

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Exam details

- Time: Wednesday, April 24th, 8:20 to 10:20 PM
- Topics:
 - 3.1 to 3.3 (Algorithms)
 - 5.3 to 5.4 (Recursion)
 - 6.1 to 6.3 (Counting)
 - 7.1 to 7.2 (Probability)
 - 10.1 to 10.3 (Graphs)
- Things to bring:
 - Writing utensils
 - Handwritten reference sheet (8.5x11)
 - **4 function** calculator
 - ID (UF ID, state ID, or ID on phone)

Algorithms and recursion

Topic outline:

- Understanding a recursive definition
- Coding a recursive solution to a problem
- Analyzing time complexity of a recursive algorithm (see handout)
- Specific recursive algorithms (tree traversal + stacks)

Tree traversal

Problem

How many ways are there to arrange the letters in the following words?

- MATH
- DISCRETE
-

Counting

Topic outline:

- Basic counting
 - Subtraction (finding the complement)
 - Division (accounting for symmetry)
- Principle of inclusion-exclusion
- Permutations
- Combinations
- Pigeonhole principle

Problem

Probability

Topic outline:

- Basic probability
- Independence
- Conditional probability
- Probability distributions (Bernoulli trials)

Problem

Graphs

Topic outline:

- **Definitions**
- Types of graphs
- Special graphs
- Graph representation
 - Adjacency matrix
 - Adjacency list
 - Incidence matrix
- Graph isomorphism

Problem