CSCE 222-200 Discrete Structures for Computing

Fall 2024

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Review for Midterm II

The midterm exam II will be held on Thursday, October 31, from 3:55 PM to 5:10 PM. The exam is taken in class, and open-book and open-notes.

TOPICS COVERED:
(Remark: hints/answers of Practice Exercises are given in the textbook.)

1. Algorithms and complexity

Basic Requirement: Be able to write simple algorithms and analyze their complexity.

References: Section 3.3 of the textbook.

Practice Exercises: Exercises in Section 3.3 (pages 241-243), Questions 1, 3, 15.
 Supplementary Exercises (page 246), Questios 9, 15, 17, 21.

2. Recursive algorithms and recurrence relations

Basic Requirement: Be able to write simple recursive algorithms, give and solve recurrence relations for the time complexity of recursive algorithms.

References: Sections 5.3.2 and 5.4 of the textbook.

Practice Exercises: Exercises in Section 5.4 (pages 391-392), Questions 7, 9, 11, 29, 45.
 Supplementary Exercises (pages 402-403), Questios 55, 69.

3. Permutations and combinations

Basic Requirement: Understand basic counting techniques and the pigeonhole principle, and be able to count using permutations and combinations.

References: Sections 6.1-6.4 of the textbook.

Practice Exercises: Exercises in Section 6.2 (pages 426-428), Questions 7, 11, 37.
 Exercises in Section 6.3 (pages 435-437), Questions 3, 15, 17, 35, 41.
 Exercises in Section 6.4 (pages 443-445), Questions 5, 7, 9,19, 27, 29.

4. Probability theory

Basic Requirement: Understand the basic definitions: sample space, outcome, probability, event, probability of events, independent events, conditional probability, random variables.

References: Sections 7.1-7.2 of the textbook.

Practice Exercises: Exercises in Section 7.1 (pages 475-477), Questions 1, 3, 5, 7, 21, 37.
 Exercises in Section 7.2 (pages 475-477), Questions 11, 13, 23, 25.