

CS122: Data Structures

This course builds upon CS121 to introduce students to important data structures and teaches students to compare, select, modify, and combine these data structures to build complex implementations while meeting specified performance requirements. The major objectives of the course are to guide students to:

- Compare and contrast the foundational data structures and their performance on insertion, deletion, and search operations.
 - Select and implement foundational data structures in appropriate situations to meet specified performance requirements.
 - Design, modify, and/or combine data structures to build more complex implementations capable of insertion, deletion, and search operations.
 - Trace and predict the behavior of algorithms designed to implement data structure operations.
 - Identify and correct errors and inefficiencies in algorithms and their implementations.
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Topic 1 – Motivation and the Use of AI (2 Lectures)

Topic 2. Unit Test (1 Lecture)

Topic 3. Stacks and Queues (3 Lectures)

Topic 4. Binary Search Trees (BST) (4 Lectures)

Topic 5 – Balanced Search Trees (4 Lectures)

Topic 6 – Priority Queues (3 Lectures)

Topic 7 – Hash Tables (2 Lectures)

Topic 8 – Graphs (4 Lectures)

Topic 9 - AI in practice (2 Lectures)