CS2413: Data Structure

Fall 2023

Time: MW 3pm-4:15pm

Location: Dale Hall 0200

Instructor: Chao Lan (clan@ou.edu)

Teaching Assistants:

– Haoyang Cui (haoyang@ou.edu)

– Narayan Kirankumar Soni (narayan.soni@ou.edu)

– Yonathan F. Hendrawan (yfhendrawan@ou.edu)

Office Hours:

– Lan: Th 1:30pm-4:30pm at DEH 210.

– Cui: F 1:30pm-4:30pm, Zoom (ID: 2115460344, Passcode: 02858599)

– Soni: MW 3pm-4pm & Tu 1:30pm-2:30pm at DEH 115.

– Hendrawan: Tu 11am-12:30am, Zoom (ID: 2561011763, Passcode: 292831)

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1. Course Description

This course introduces the design and implementation of basic data structures including array, vector, linked list, hash table, stack, queue, tree and graph, as well as their applications in basic algorithms including search and sorting. It also introduces the time and space complexity analysis of these data structures and associated operations using the big O notation. All discussions, assignments and exams are designed based on the C++ programming language, and this course will provide a concise introduction to C++.

2. Main Reference

M. Goodrich. Data Structures and Algorithms in C++ (2ed). Wiley, 2011.

Other reference materials may be provided during the semester.

3. Assignments

There will be regular small assignments throughout the semester. There are three types of assignment tasks.

– A programming task often asks students to implement certain data structures and associated operations from scratch in C++. It may also ask for implementations of certain search or sorting algorithms. Such task is expected to be completed based on a given C++ template and submitted on Gradescope.

– A pseudo code task often asks students to write pseudo code for a data structure or algorithm. Such task is expected to be completed based on a given Word template and submitted on Canvas.

– An analysis task often asks students to analyze a given data structure or algorithm, especially regarding its time or space complexity. Answers of such task are expected to be submitted on Canvas.

Students can collaborate on assignments, but need to clarify the collaborator in submission and be ready to independently defend their submitted answers upon request.

<u>Two-Week Late Submission</u>

Students are encouraged to submit assignments by the deadlines, but we allow late submissions. A student will have 25% penalty on the earned score if the submission is within one week after the deadline, and 50% penalty on the earned score if the submission is within two weeks after the deadline. For example, if the deadline is Oct 2 (Monday), then a submission after this time but before Oct 9 (Monday) will have a 25% penalty on the earned score and a submission after Oct 9 but before Oct 16 will have a 50% penalty on the earned score. Submissions after two weeks will not be graded. All deadlines are by 11:59pm of the due date.

4. Exams

There is one mid-term exam and one final exam. Both are written and closed-book exams, and will be taken in class. Exams will focus on evaluating a student's memorization, understandings and applications of lectured subjects including C++, algorithms, data structures and related time and space complexity analysis. Variants of the lectured data structures may also be tested.

Students cannot collaborate on the exams.

5. Grading Policy

Assignments contribute to 60% of the final score. Each student's lowest score will be dropped in calculation.

Each exam contributes to 20% of the final score. Exam scores may be lightly curved.

In general, a student gets A for earning 90+, B for 80+, C for 70+, D for 60+ and F for 60-.

6. Pre-requisites

See official pre-requisites.

7. Others

We will handle other issues such as academic misconduct according to the university's policies.

Currently, we do not have any regulation on the use of AI tools such as ChatGPT in completing assignments, but this may be changed to comply with related new policies at OU. In addition, AI tools cannot be used during exams, and the whole course is designed with an assumption that students will continue the practice of traditional coding and analysis.