CS 300 – Data Structures

Description

The objective of this course is to introduce fundamental techniques of algorithm analysis, to introduce common data structures, their properties and implementation and to apply C++ programming skills to implement solutions using common data structures to practical problems. It is a "required" course for the CS program as well as it is a "core" or "elective" course for all FENS programs.

Topics to be Covered

- Week 1_1: Introduction and Algorithm Complexity Analysis
- Week 1_2: Linear Data Structures 1 (Linked Lists)
- Week 2_1: Linear Data Structures 2 (Stacks, Queues)
- Week 2_2: Trees 1 (Tries, Binary Search Trees)
- Week 3_1: Trees 2 (AVL Trees, Tree Traversals)
- Week 3_2: Hash Tables
- Week 4_1: Heaps (Priority Queues)
- MIDTERM
- Week 4_2: Disjoint Sets
- Week 5_1: Sorting 1 (Insertion Sort, Shell Sort)
- Week 5_2: Sorting 2 (Heap Sort, Merge Sort, Quick Sort)
- Week 6_1: Graph Data Structures 1 (Representation)
- Week 6_2: Graph Data Structures 2 (Depth-First and Breadth-First Search)

Instructor

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Teaching Assistants

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Schedule

Lectures: Tuesday 14:40 – 17:30 and Wednesday 11:40 – 14:30 at zoom
Recitations: Section A: Thursday   12:40 – 15:30 at zoom
                    Section B: Thursday   9:40 – 12:30 at zoom

Office Hours: See schedule

Lecture Notes, Codes and Recitation Material

All of the material is distributed here. Folder contents will be updated as you progress through weeks. You need to login as your SU email account to access the files in Google Drive.

Textbook

Data Structures & Algorithm Analysis in C++, (2nd, 3rd, or 4th edition), Mark Allen Weiss, Pearson, 2014, ISBN 0-273-76938-3 (4th edition).
We may not stick to the textbook all the time, you are responsible for all material covered in class.

Homework

There will be 3 homework assignments. They will be assigned and collected at **SUCourse+**. Recitations will be used for clarification about the homework. Late penalty is 10% of full grade (only 1 late day is allowed). If the homework is not done by you, you will get **-100** (minus 100). If repeated, you fail.

Quizzes

There will be 2 or more quizzes. All quiz dates will be announced at least one day prior to the quiz.

Tentative Grading Policy **(might change if any change occurs in the online education conditions)**

- Midterm (34%): August 3 Tuesday 18:30
- Final (36%): Scheduled by Student Resources
- Homeworks (30% total): 3 homework will be assigned and they have equal weight

- ➔ For proctored exams, your webcam and microphone should be on during the exam. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam.
- ➔ If you miss the midterm or the final exam and if you do not take the make-up exam for that missing exam; then you will directly get an F grade.
- ➔ If you miss all of the quizzes, all of the homework assignments, midterm and final exams as well; then you will get an NA grade.

Makeup Policy

If you do miss an exam, you need to show a documented emergency situation (such as a medical report) and notify the instructor before or within 24 hours after the exam date. The instructor reserves the right as to when and how a makeup exam will be granted. The topics for the make-up exams are from everything that is covered in class at the time of the exam.

Expectations from Students

- Students are expected to attend all classes and recitations. You must attend the synchronous Zoom lectures, recitations, and real-time online exams with your SU email account.
- Students are responsible for the material covered in class even if it is not part of the lecture notes published on the website.
- Students are responsible to check their emails (Sabanci University accounts), SUCourse and course website daily for any announcements related to this course.
- **PLAGIARISM WILL NOT BE TOLERATED.**
  - Any act of plagiarism may result in a direct fail (F) of the course.