Comp2402 - Abstract Data Types and Algorithms

Description

Introduction to the design and implementation of abstract data types and to complexity analysis of data structures. Topics include: stacks, queues, lists, trees and graphs. Special attention is given to abstraction, interface specification and hierarchical design using an object-oriented programming language.

Topics Covered

- The Java Collections Framework
- Array-Based Lists
- Linked Lists
- Hash Tables
- Skip Lists
- Balanced Binary Search Trees
- Heaps
- Sorting Algorithms
- Graphs

Prerequisites

One of COMP1406, COMP1006, SYSC2004, with a minimum grade of C-.
Precludes additional credit for COMP2002 (no longer offered), SYSC2002 (no longer offered), SYSC2100.

Textbook

Course textbook is [Open Data Structures](#) (in Java) by Pat Morin Click the link for access to this free resource.

Evaluation

Students will be evaluated in this course according to the following measures:

Component	Weight
Assignments (x5)	50% (10% each)
Mid-term exam	15%
Final Exam	35%

Assignments

- There will be 5 assignments in this course.

- All assignments will be made available on the course web page as they are released.
- All assignments submissions must be your own individual and original work (see plagiarism).
- Software may be used to analyze and compare submissions to ensure that no instances of academic misconduct have been committed.
- All assignments are counted towards the final grade.
- Recommendations:
  - Do not wait until the last minute to submit your assignments.
  - Start early and keep submitting partially completed versions. That way, if you get sick, your partially completed version will be marked, and you will not get 0. Being sick on the day an assignment is due is not an excuse for not doing it. Last minute issues (e.g., home internet/device failure, sudden illness) are not considered acceptable excuses for having completed no work over the duration that the assignment was available.
  - Always keep a backup of your work, perhaps on a USB flash drive, via Dropbox, or by sending yourself an email with your assignment attached. That way you can access your code from anywhere.
  - If any instructions are unclear, please ask for clarification. Incorrect assumptions or misunderstood directions will not be accepted as valid excuses. It is your responsibility to ensure you understand the question completely.
- Submission Guidelines:
  - Assignment submission will be completed using the 2402 assignment submission server.
  - Details will be made available on the assignment pages as they're released.
  - DO NOT email your assignments to any TAs unless requested to do so.
- Grading:
  - All assignments submitted through the submission server will be graded automatically.
  - You will be provided with a mark through cuLearn.
  - You should ensure that the posted marks are correct.
  - If you are having issues with submitting your assignment please request assistance *before* the assignment is due.
  - Once the submission server is closed, no remarking will be done.
- Late Policy & Accommodations:
  - Assignments must be handed in before the due date and time.
  - You will be given a sufficient amount of time to complete each assignment.
  - No late assignments will be accepted in this course.
  - The submission server will no longer accept assignments after the deadline.
  - Illness on the due date or other last minute issues are not considered grounds for accomodation.
  - If you are sick for an extended period of time, please inform the instructor (not the TAs). You will need to have a doctor's note to verify your condition. Please ensure that the note is on the professional letterhead of the clinic. Only the attending physician who personally diagnosed the student at the time of their illness can sign/write the note. Such situations will be handled on a case-by-case basis.

o   Accommodations will not be provided once the deadline has passed.

Midterm

The midterm will be closed-book and will cover material discussed up to the lecture prior to the midterm. The test will be held during regularly scheduled lecture, the specific dates will be announced on the main course page and in lecture. You must attend, write, and submit the midterm in order to be graded. I If sick, you must inform the instructor via email by the day before at the latest, and you will need to have a doctor's note to verify your condition. Please ensure that the note is on the professional letterhead of the clinic. Only the attending physician who personally diagnosed the student at the time of their illness can sign/write the note. The doctor's note must be submitted within one week of the missed test. Exceptions are only granted at the discretion of the instructor.

Final Exam

The time and place, as well as the format of the final exam will be announced later in the term. Do not make travel plans until the dates are known as no advance exams will be given. The exam period can be found at http://carleton.ca/registrar/registration/dates-and-deadlines/. Attendance of this exam is mandatory.

If you become ill during the examination period and need to apply for a deferral, please visit the Registrar's Office website for the most up-to-date information about deferred examination eligibility, deadlines, application, documentation and more.

Tutorials

There are no scheduled tutorials for this class.

Collaboration Policy

Collaborating on assignments is strictly disallowed. You must complete the work by yourself. If you need help, please see a TA or your instructor. Posting assignment solutions on discussion boards before the due date and time is also prohibited.

SCS Computer Accounts

Any student taking an SCS course qualifies to have an SCS account. SCS accounts can be created at the following URL: http://www.scs.carleton.ca/newacct. SCS students can access one of the designated labs for your course. The labs are operational 7 days a week 24 hours per day, please be advised that the building will be closed overnight, Mon. - Fri. 23:00 - 8:00 and on weekends from 17:00 - 8:00. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00. All SCS account related information is accessible at the following URL: http://www.scs.carleton.ca/nethelp.

Undergraduate Academic Advisor

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at undergraduate_advisor@scs.carleton.ca. The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

Fair use of materials

All materials created for this course (including, but not limited to, lecture notes, in-class examples, tutorial exercises, assignments, examinations, and posted solutions) remain the intellectual property of the instructor. These materials are intended for the personal and non-transferable use of students registered in the current offering of the course. Reposting, reproducing, or redistributing any course materials, in part or in whole, without the written consent of the instructor, is strictly prohibited.

CSAS

The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: carleton.ca/csas.

University Policies

Student Academic Integrity Policy

Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

Plagiarism

As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science.

Unauthorized Co-operation or Collaboration

Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part,

when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

Students with Disabilities Requiring Academic Accommodations

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Religious Obligation

Write to me concerning any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website http://www.carleton.ca/equity/accommodation

Pregnancy Obligation

Write to me concerning any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website http://www.carleton.ca/equity/accommodation

Medical Certificate

Students who are ill during an in-class test, or for an extended duration and are seeking accommodation for an assignment, will require a doctor's note as evidence of their inability to complete the assessment. The note must be the original documentation on official letterhead, signed by the attending phsician who personally diagnosed the student at the time of their illness. The note should indicate the nature of the illness/issue, and duration date that the student is expected to be unable to work. For more information see: https://carleton.ca/health/doctors-notes/