COMP9024: Data Structures and Algorithms

Course Outline

(Updated Fri Jul 29 14:13:44 EST 2011)

Aims:

The aims of this course are

to introduce the basic data structures and algorithms, and

develop skills in the design and analysis of algorithms and data structures.

Learning Outcomes:

If successfully completing this course, students will

- understand the basic data structures and algorithms,
- be able to analyze the complexities of software, and
- be able to design and select appropriate data structures and algorithms for applications.

Units of Credit:6

Prerequisite: COMP9021.

Lecturer in Charge: John Plaice

Lectures:

Each week there is a three-hour lecture. The following topics will be covered in the lectures:

- Java programming language
- Analysis of algorithms
- Linked lists, stacks and queues
- Trees
- Priority queues
- Search trees
- Sorting
- Maps and dictionaries
- Text processing
- Graphs

The aim of the lectures is to facilitate learning and understanding of the important concepts within course syllabus. They will provide the main source of course material delivered. There will be one 3-hour lecture every week. In the lectures, I will

- explain and critically discuss each topic
- demonstrate the principles in each topic with examples
- evaluate and discuss the relevance of each topic to solving practical real-world problems

You are welcome to ask questions during the lecture.

- Lecture time: Wednesday 18:00-21:00 in Electrical Engineering EE 418.

Assignments:

There will be four Java programming assignments, all of which are individual assignments.

Late penalties:

You are expected to complete each assignment on time. The late penalty:

The full mark of an assignment is *100-n* if your submission is *n* days late.

Homework:

There will be homework every week. You do not need to submit the homework. Although solutions to all homework will be released, you are highly recommended to work out your own solutions.

Examination:

There will be a formal **three-hour, open book** exam at the end of this course.

Assessment:

Your final result is calculated based on:

- Assignments: 30%
- Final exam: 70%

Supplementary Exam:

You will be given a supplementary exam ONLY IF

- you have not been caught for plagiarism, and
- your final result is at least 45, or you are on the special list due to illness and other reasons.

Note that all requests for special consideration must be put in writing **within one week** of the event at the Student Centre.

Textbook:

- *Data Structures and Algorithms in Java* (5^{th} edition) by Michael T. Goodrich and Roberto Tamassia

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Plagiarism:

All work submitted for assessment must be your own work. Assignments must be completed individually. We regard copying of assignments, in whole or part, as a very serious offence. We use plagiarism detection software to search for multiply-submitted work, or work derived from other students or from other sources. Be warned that:

- The submission of work derived from another person, or jointly written with someone else will, at the very least, result in zero marks for the assignment or lab exercise;
- allowing another student to copy from you will, at the very least, result in a reduction in the mark for your own assignment or lab exercises; and
- severe or second offences will result in automatic failure of the course, or even exclusion from the University.

Collaborative learning in the form of "think tanking" is encouraged, but students are not allowed to compose programming solutions together as a group during such discussions. Students are also warned not to send code fragments of the assignments to each other in any form (e.g. as email or listings). In addition, copying/purchasing of code that is available on the Web is also not permitted. Students who are singled out during our regular plagiarism sweep will be dealt with according to School Policy: http://www.cse.unsw.edu.au/~studentoffice/policies/yellowform.html.

The Learning Centre Web site is the main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via http://www.lc.unsw.edu.au/plagiarism.

Getting Help:

From time to time, various problems may arise in your study of this course. Below is a list of typical problems, with suggestions for where you might seek help with them:

Problem	**Solution**
Can't understand lecture material	Ask the lecturer at the conclusion of a lecture, or ask the lecturer for a consultation
Stuck with assignments/programming	Go to a consultation
Problems with your account	CSE Help Desk

If you have a problem, do not wait until late in the session before you seek help. Problems that are dealt with early are usually quicker and easier to resolve than ones that are left to the last minute.

You may find the following links useful:

- CSE Help Desk: `http://www.cse.unsw.edu.au/~helpdesk`
- UNSW library: `http://info.library.unsw.edu.au`
- UNSW Learning center: `http://www.lc.unsw.edu.au`
- UNSW Communications unit: `http://www.comms.unsw.edu.au`

Continual Course Improvement

Student feedback on this course, and on the lecturing in this course, will be obtained via an electronic survey at the end of session. Student feedback is taken seriously, and continual improvements are made to the course based in part on this feedback. Students are very strongly encouraged to let the lecturer in charge know of any problems, as soon as they arise. Suggestions (or even complaints!) will be listened to very openly, positively, constructively and thankfully, and every action will be taken to fix any issue or improve the students' learning experience.

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