COMP9024: Data Structures and Algorithms

Course Outline

Hui Wu

Term 1, 2020

http://www.cse.unsw.edu.au/~cs9024

General Information

- Lecturer in Charge

  Hui Wu

  Office: K17-501D

  Office phone: 93856572

  Email: huiw@unsw.edu.au
- Lecture time & venue

  4-6pm Tuesday, Physics Theatre

  4-6pm Friday, Law Th G04
- Consultation

  2-5pm Thursday
- Course URL

  http://www.cse.unsw.edu.au/~cs9024 or https://webcms3.cse.unsw.edu.au/COMP9024/20T1/

Aims

The aims of this course are

- to introduce the basic data structures and algorithms, and
- to develop skills in the design and analysis of algorithms and data structures.

Outcomes

If successfully completing this course, you will

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

Topics

- C Programming language
- Analysis of algorithms
- Priority queues and disjoint set union-find data structures
- Trees and search trees
- Text processing algorithms
- Graph algorithms
- Randomised algorithms

Assessment

- Assignments: 40%
- Final exam: 60%
- To pass the course, your final overall mark must be 50 or higher and the final exam must be 25 or higher. Students who do not meet these requirements but achieve an overall mark ≥45 can sit the supplementary exam, in which they have to achieve a mark ≥50 to pass with a final mark of 50.

Assignments

- Four individual assignments
  - Assignment 1 (Weeks 3-4)
  - Assignment 2 (Weeks 5-6)
  - Assignment 3 (Weeks 7-8)
  - Assignment 4 (Weeks 9-10)

- Use C to write programs for all the assignments

Final Exam

- Three hours
- Closed book
- Two Parts
  - Part I: Basic data structures and algorithms
  - Part II: Design and analysis of algorithms.
- Use pseudo code to write algorithms.

Problem Sets

- One problem set every week.
- Problems are intended to help you understand the course material and prepare for the final exam.
- You are strongly recommended to work out the solutions to all the problems.
- No mark for problem sets. So you don’t submit them.

Bonus Mark Scheme

- Bonus marks are given to those who
  - proposed better solutions to problems, or
  - proposed exceptional solutions in assignments.
- The max total bonus mark is 3, added to your final marks.

Help Sessions

- To help students who have issues in C programming, we have scheduled two help sessions:
  1. Help Session 1:

     2pm-4pm Wed, Piano Lab, tutors: Sahil Punchhi and Sidra Malik
  2. Help Session 2:

     6pm-8pm Fri, Piano Lab, tutors: Sahil Punchhi and Sidra Malik

  Both sessions are available Week 2 - Week 10.

Furthermore, Wael Alghamdi will help students in China due to Coronavirus via Wechat. He will answer questions related to C programming.

Textbooks

- The recommended textbooks for this course are

  - Robert Sedgewick, Algorithms in C, Parts 1—4 3rd edition, Addison Wesley.
  - Robert Sedgewick, Algorithms in C, Part 5 3rd edition, Addison Wesley.

- The following introduction to the C programming language is recommended as a supplementary textbook:

  - Alistair Moffat, Programming, Problem Solving, and Abstraction with C , 5th edition, Pearson, 2003.