Data Structures and Algorithms

Introduction

Presented by

André van Renssen
School of Computer Science

Welcome to COMP2123 and COMP9123

This class is your formal introduction to algorithms and data structures. Although you have been programming for a while and have been using algorithms and data structures, this class will lay the **foundations** for you to come up with your own algorithms and data structures and to be confident of their correctness.

After this class, getting your code to work will seem less like magic and more like science.

When a friend asks why your code works but you have no idea

MAGIC

Data Structures and Algorithms

This UoS comes in three flavors:
- COMP2123: Normal UG stream
- COMP2823: Advanced UG stream (taught by Julián Mestre)
- COMP9123: PG stream

What's the difference?
- COMP2123 and COMP9123 share this main lecture
- COMP2823 has a separate lecture
- Assignments and final are slightly different

Overview

Timetable:
- – Main lecture: Wednesdays 1:00-3:00pm, Seymour Theatre. (Either York or Everest.)

Textbook (recommended but not mandatory):
- – Algorithm Design and Applications by Goodrich and Tamassia

Systems:
- – Canvas: Quizzes, and lecture recordings
- – Ed: Discussion, slides, and assignments (programming)
- – Gradescope: Assignments (written)

Assessments

Quizzes (worth 10%):
- 10 short equal-weight quizzes
- open after lecture (starting Week 2), due before next lecture

Assignments (worth 30%):
- 6 short equal-weight assignments
- released on Friday (starting Week 1)
- due Thursday two weeks later
- either written (Gradescope) or programming (Ed)
- late submissions cost 20% of available marks per day

Final exam (worth 60%):
- closed book but allowed to bring one A4 sheet of paper
- 40% barrier

Late Submission Example

If you have not been granted special consideration (through the University):

- – If your work would have scored 60% and is 1 hour late, you get 40%
- – If your work would have scored 70% and is 28 hour late, you get 30%

Keep in mind:
Submission sites can become very slow near deadlines

Special Consideration

If your performance on assessments is affected by by illness or misadventure:

Follow proper procedures
- – Have a professional practitioner sign the USyd form
- – Submit your application online, upload supporting documents
- – Deadline is 3 days after assessment is due
- – https://sydney.edu.au/students/special-consideration.html

There is a similar process for other reasons for special consideration, such as religious observance, military service, representative sports

Tutorials

We will post in Ed a tutorial sheet with exercises covering that week's material.

To get the most out of the tutorial, try to solve as many problems as you can **<u>before</u>** the tutorial. Your tutor is there to help you get unstuck, not to lecture.

At the end of the week, we will post solutions to selected exercises.

Communication

Email is an inefficient way to communicate in large classes such as ours. Unless yours is a personal issue, do not sent us email.

If you have questions about the lecture materials, homework assignments, or any logistics related to the class, please use the Ed discussion forum so that others can benefit from the answers.

Finally, if you spot a question that you know the answer for, please feel free to answer. It helps your classmates but more importantly, writing your thoughts down helps you crystalize your understanding.

About the lecturer

Since we will be working hard together, it would be nice to get to know each other a bit better. Even though I cannot really ask you all to introduce yourselves, I can still introduce myself:

- – From the Netherlands, but lived in Canada, Japan, and Australia
- – My field of research is Algorithms focusing on computational geometry
- – Joined University of Sydney in 2018
- – Hobbies: Hiking, cycling, board games, movies/anime

Do you have a disability that impacts on your studies?

You may not think of yourself as having a 'disability' but the definition under the **Disability Discrimination Act (1992)** is broad and includes temporary or chronic medical conditions, physical or sensory disabilities, psychological conditions and learning disabilities.

The types of disabilities we see include:
Anxiety // Arthritis // Asthma // Autism // ADHD
Bipolar disorder // Broken bones // Cancer
Cerebral palsy // Chronic fatigue syndrome
Crohn's disease // Cystic fibrosis // Depression
Diabetes // Dyslexia // Epilepsy // Hearing impairment //
Learning disability // Mobility impairment // Multiple
sclerosis // Post-traumatic stress // Schizophrenia //
Vision impairment
and much more.

In order to get assistance, students need to register with Disability Services. It is advisable to do this as early as possible. Please contact us or review our website to find out more.

THE UNIVERSITY OF
SYDNEY

**Disability Services Office
sydney.edu.au/disability
02-8627-8422**