COMP2123: Data Structures and Algorithms

Introduction

Presented by

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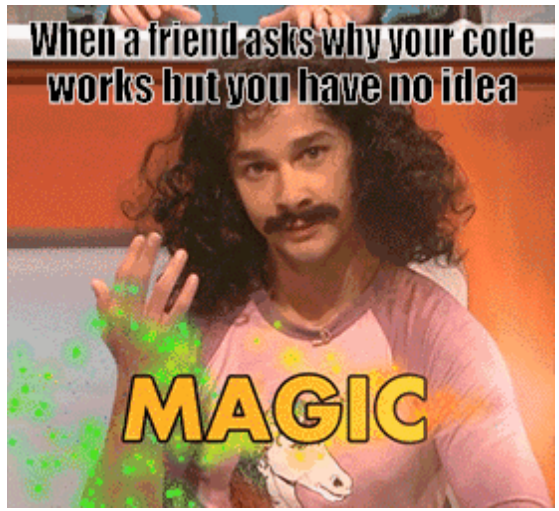
Welcome to COMP2123

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.



Data Structures and Algorithms

This UoS comes in two flavors:

- COMP2123: Normal stream
- COMP2823: Advanced stream

What's the difference?

- COMP2823 covers some more advanced topics
- COMP2823 assignments and final are slightly different

Overview

Timetable:

- Main lecture: Mon 9:00-11:00 or Wed 9:00-11:00 (online)

Textbook (recommended but not mandatory):

- Algorithm Design and Applications by Goodrich and Tamassia

Systems:

- Canvas: Quizzes, lecture recordings, practice exam
- Ed: Discussion, slides, tutorials, programming exercises, and assignments (programming)
- Gradescope: Assignments (written)

Expectations

Attend scheduled classes, and devote an extra 6-9 hours per week:

- doing assessments,
- preparing and reviewing for classes,
- revising and integrating the ideas,
- practice and self-assess

Participate constructively:

- Respect for one another: criticize ideas, not people
- Assume good intent: we all share the same goal
- Humility: none of us knows it all

Reach out to teaching staff whenever you face difficulties

Assessments

Quizzes (worth 10%):

- 10 short equal-weight quizzes
- released on Mon (starting W2), due next Sun

Assignments (worth 30%):

- 5 short equal-weight assignments
- released on Friday (starting W3), due Friday two weeks later
- either written (Gradescope) or programming (Ed)
- late submissions cost 5% of available marks per day for first 5 days, after that mark becomes 0

Final exam (worth 60%):

- open book
- 40% barrier
- Supervised

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 55%
- If your work would have scored 70% and is 3 days 23 hours late, you get 50%
- If your work would have scored 90% and is 4 days late, you get 0%

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

More resources in Welcome Pack

Navigate to the Resource Tab in Ed to find the University's Welcome Slide Pack, where you'll find info about:

- emergency procedures
- covid-safe
- health and safety
- student support
- safety
- integrity
- tips for online learning

Academic Integrity

We'll be running all submissions through similarity checking software: TurnitIn for textual tasks (*make sure your submission is scannable, i.e., document contains text*), other systems for code.

Posting or using an answer using resources like ChatGPT, Chegg, Geeks for geeks, etc. is **not allowed**.

Copying an answer literally, from any source, doesn't show your understanding and will generally get you very few marks and copying without attribution is **plagiarism**.

Working together to understand a problem is fine, but you should come up with your own solution and write it in your own words.

Penalties for academic dishonesty or plagiarism can be sever and can delay the release of your result at the end of the semester.

Lectures

Delivered over zoom **only**. Recordings will be posted to canvas.

We will use Mentimeter for questions and answer.
https://www.mentimeter.com

Code: 47849221

This is the first time I use this platform, so bare with me.

Tutorials

We will post in Ed a tutorial sheet with exercises covering that week's material (for the tutorial the week after).

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

After all tutorials of a given week are over, 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.

Ed etiquette

When asking questions:

- try to get unstuck first: googling your problem and/or reading our guides should solve most technical issues (i.e., git)
- use Ed's search function to see if it's been answered before
- when asking a new question:
  - add a descriptive title,
  - select the correct tag, e.g. questions about Quiz 4 should be tagged with Quizzes $\rightarrow$ Q4,
  - describe what you've already tried to solve the problem,
  - *Don't take a screenshot and say "what does this mean?"*.
- if you figure it out on your own, answer your own question

Ed expectations

- we have limited resources for monitoring Ed, which means that some questions will have to wait until the tutorial.
- do not expect any responses outside of working hours (Mon-Fri 9am-6pm)
- in order to answer as many questions as possible our answers will be short and to-the-point or just a simple endorsement
- SLA is 1 week; don't expect synchronous conversation

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 Argentina, but lived in America (East and West coast), Germany, and Australia
- I design algorithms for solving optimisation problems
- Joined Uni Sydney in 2010, but in recent years I've spent about half of my time at Meta as a Research Scientist
- When not working: Running, reading, gardening, family