Systems Programming

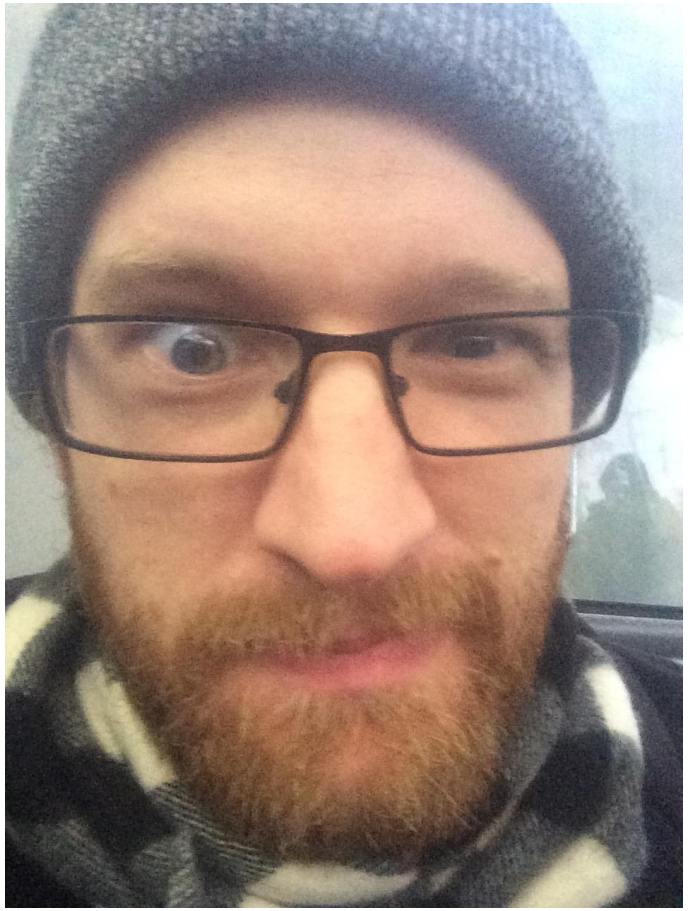
Acknowledgement of Country

We acknowledge and pay our respects to the Kaurna people, the traditional custodians whose ancestral lands we gather on. We acknowledge the deep feelings of attachment and relationship of the Kaurna people to country and we respect and value their past, present and ongoing connection to the land and cultural beliefs.

Welcome to Systems Programming

Bernard Evans

- Course Coordinator
- Lecturer



A brief overview of this course

TL;DR

We learn:

- Bash
- C

In more detail

We learn:

- Fundamental aspects of low-level computing and how programs can and do interact with the operating system
- We do this by learning Bash and C

Lecture Outline

- Resources
- Assessment (long – but important)
- What the course teaches
- How to take this course
- Keeping in touch
- Next things

University of Adelaide community

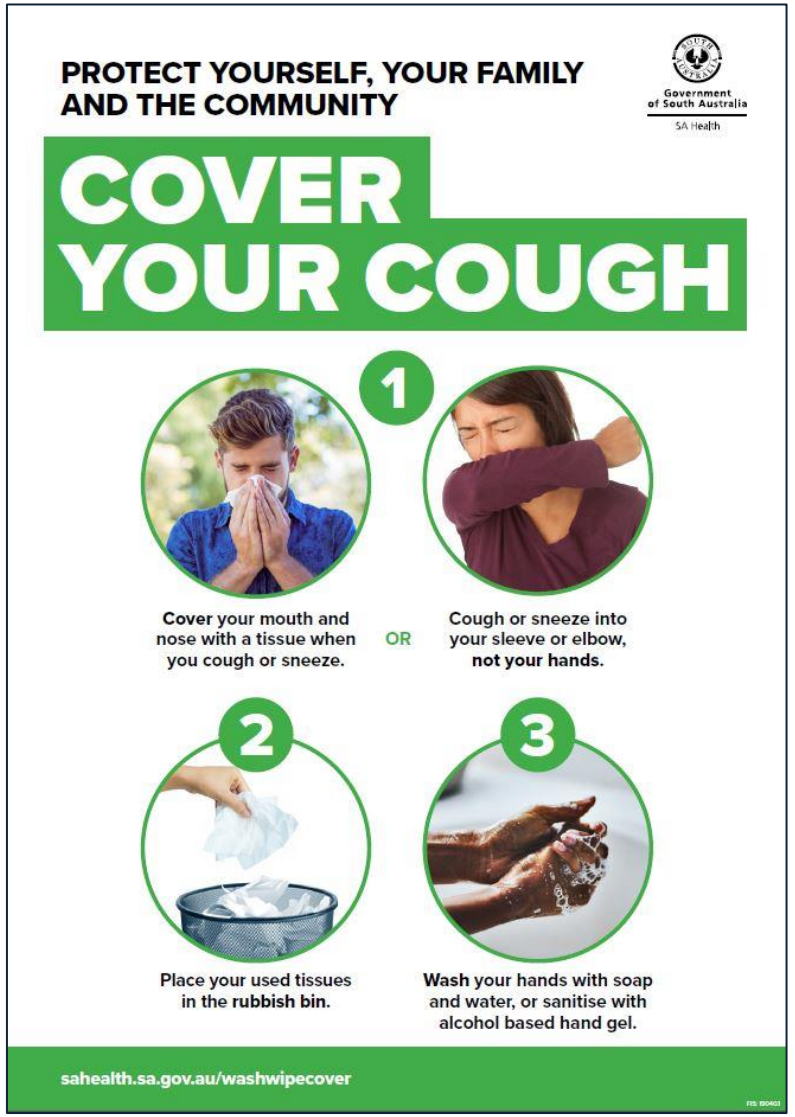
- COVID-19 and its impact
- Diverse and inclusive community
- Role of community during difficult times
- Please respect and take care of each other

How we can help

- Student Life
- Counselling and support
- 8313 5663

- **Safer Campus Community**
- Report harassment or anti-social behaviour
- 8313 5663

- UniCare
- Healthcare on campus
- 8313 5050



Resources

All resources for the course are referenced in two places

The Course Outline:

- https://www.adelaide.edu.au/course-outlines/102482/1/sem-1/2022/
- Some general course information, textbooks, assessment etc

The myUni pages:

- https://myuni.adelaide.edu.au/courses/75036
- Lectures, recordings, assignments etc

Websubmission

- https://cs.adelaide.edu.au/services/websubmission/?sub_period=s1

Assessment

Three components:

1. Written Examination (In Person)	45% (this is a **hurdle**)
2. Mini-Exam (Online)	10% (this is not a hurdle)
3. 4 Assignments (Websubmission)	10, 10, 10, 10% (40% total)
4. Workshops	1% (x5, total 5%)

My Expectations:

- Attend all lectures, all workshops, do all assignments
- **ALSO** practice in your spare time ☺

Non-Assessment Fun Times

Quizzes

- These will be available 1 week after each lecture for ~2 weeks.
- The logic is spaced and paced revision (I am making your life easy).
- My expectation is that you will do them (they are easy).
- **NOT** worth anything.

Fake Assignments

- I will produce one or two fake assignments this semester.
- Like real assignments, for practice.
- **NOT** worth anything.

Grades

Mark	Grade		Notes
85-100%	High Distinction	HD	Great!
75-84%	Distinction	D	Very good
65-74%	Credit	C	Good
50-64%	Pass	P	Satisfactory
0-49%	Fail	F	Cannot count this course for points or as a pre-requisite.
0%	Fail No Submission	FNS	No work submitted for assessment
	Result Pending	RP	Mark has not yet been finalised.

If you see an RP on your transcript, it means that your mark is not currently available. If you don't know why, you should contact your course coordinator.

Minimum Performance

- On each component with a hurdle, you are required to achieve at least 40% of the marks allocated in the component.
- If your mark for any component with a hurdle is less than 40% of the allocated marks for that component, and your overall mark is greater than 45 F, your overall mark will be **reduced** to 45 F.
- To pass the course, you must obtain a passing mark overall and achieve at least 40% of the available marks in components with a hurdle.
- This applies for the **written examination**

Courses with multiple codes

- A single course may include students enrolled in different course codes (UGRD, PGRD, etc.).
- The assessment requirements for students at the postgraduate level will be higher than that for undergraduates.
- The different requirements may take the form of extra coursework or different exam papers.

Late submission policy

- You should hand your coursework in on time.
- If you hand in your work late, your mark will be capped, based on how many days late it is.
  - up to 1 day late — mark reduced to 75%, marks below 75% not affected.
  - up to 2 days late — mark reduced to 50%, marks below 50% not affected.
  - up to 3 days late — mark reduced to 25%, marks below 25% not affected.
  - More than 3 days late — mark is reduced to 0.
- If you handed in something on time, and it is worth more than something that you handed in late, you will get the higher mark.
- Hand in early!

Repeating Students

- Students who repeat a course are expected to attempt all of the aspects of the course again. This includes making fresh attempts at all coursework assessment items.
- You may apply to the course coordinator to have your previous work counted but this is not usually granted.
- Make sure that you attend all of the lectures, do all of the work and study hard for the exam – you don’t want to get stuck repeating the same course over and over.

Modified arrangements

Assignment extensions

- Extensions will not be granted for circumstances including minor ailments; travel, employment, family, customary, sport or leisure commitments; problems with balancing workloads; normal exam stress or anxiety.
- If you think your situation is exceptional, contact your course coordinator ASAP, who will then consult the Head of School.
- Students who deliberately submit false or fraudulent documentation may be referred to the **Student Misconduct Tribunal**.
- You will normally only receive an extension equivalent to the number of days covered by your documentation. Don’t expect to get an extra week because you lost a day.

Additional assessment

For **Level 2** and above courses:

- If your final result is **45**-49, additional assessment (assignment, exam) is automatically granted.
  - **lecturers** –if you specified any assessments as mandatory in your course outline you should add:
  - If you completed all mandatory assessments.
- In the case where an additional exam is granted, the better of the primary or additional exam results is used to calculate your final grade.
- If any kind of additional assessment is granted your overall result for the course is capped at 50P.
- You must make yourself available during the additional assessment period.

Replacement exams

- Replacement exams will **not** be granted for circumstances including minor ailments; travel, employment, family, customary, sport or leisure commitments; problems with balancing workloads; normal exam stress or anxiety.
- Students granted a replacement exam are not eligible to sit the primary exam.
- Students who sit the primary exam will not be eligible to apply for a replacement exam unless a major issue arose during the exam.
- Students must make themselves available during the replacement exam period.

Replacement exams (cont.)

- Students will not be entitled to an additional assessment if they have already sat a replacement exam, i.e., no supps on supps.
- Students granted a deferred replacement exam will not be eligible to sit the primary exam or the replacement exam (only under exceptional circumstances will a deferred replacement exam be granted).
- The University must notify students of the outcome of their replacement exam applications within 3 business days (if you already sat the primary exam, do not bother applying for a replacement exam).

Replacement exams (cont.)

- Students who deliberately submit false or fraudulent documentation may be referred to the Student Misconduct Tribunal.
- For the full policy on Modified Arrangements, see:

https://www.adelaide.edu.au/policies/3303

Additional/Replacement exam dates

- Go to the University Examinations Site for information on Additional/Replacement exams:
  - http://www.adelaide.edu.au/student/exams/

Academic honesty policies

Academic Honesty Policies

- The University has strict policies prohibiting students from presenting other people's work as their own, whether that of students or from outside the University.
- You may not copy code from another student or give another student your code to copy from, unless specifically authorised to do so by a staff member.
- You may not copy code from anywhere else, without permission.
- If caught, you may receive zero for the assignment, zero for the course or be expelled.
- We don't give you assignment work just to keep you busy, we do it to develop your understanding and ability to apply important techniques.
- If you don't do the work yourself, you won't be able to do it in the examination and you won't be able to do it in the work force.
- Full policy available at the university webpages.

Violations to policy

Plagiarism

- Using another person's **ideas**, **designs**, **words** or **works** without appropriate acknowledgment.

Collusion

- Another person assisting in the production of an assessment submission without the express requirement, or consent, or knowledge of the assessor.

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1. Do not submit any work or part thereof which is not yours.
2. Do not submit any work for which you have received unfair assistance.

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Example 2

I had finished my assignment, and a classmate was asking for help. Since I am a kind person, I

- Gave a few high-level tips to my classmate.
- Discussed high-level concepts regarding the assignment with my classmate.

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Example 4

The assignment seems to be the same as the one given last year. I contacted my friend who took the course last year and got a copy of his solution.

Example 5

The assignment seemed to be similar to another given at a different university. So, I

- Copied and submitted the model answers available at that university's website.
- Took parts of the model answers and integrated them into my solution.

Example 6

I studied at a school/college/university where doing _____ is acceptable. So I assumed doing this at The University of Adelaide is also acceptable.

How to avoid plagiarism/collusion

- If you get stuck, seek help from the lecturer, tutor or prac demonstrator rather than copying from someone else.
- Starting your work early will help you to avoid getting stuck at the last minute.

When in doubt, ask your lecturer.

Back on Topic

Why are you studying Systems Programming?

Terrible answers

- It was compulsory
- I needed a second year elective
- I need the correct skills to fight dragons!

Why are you studying Systems Programming?

- Sometimes you need to write programs that interface with the operating system
- Examples:
  - Making new files and directories
  - Checking on the status of files and directories
  - Communicating between processes in the system
  - Launching processes in the system
  - Checking whether a process has completed properly
  - Waiting for a process to finish
  - Timing processes in a system

What will we learn?

- In this course you will learn to write programs that use the services provided by an operating system to interact with user and system processes and files.

- You will learn about the programming interface offered by the Unix system in two languages:
  - Bash!
  - C

What is Bash?

Bash

- Stands for: **B**ourne-**a**gain **Sh**ell
- Is a scripting language…
- It allows you to write a series of commands into the terminal and have them all execute in sequence… kind of like… programming?
- Interfaces neatly with UNIX commands
  - ls, cp, rm, mv, grep
  - Very powerful when used in combination with common commands
  - Quite slow

What is C?

C

- It is basically C++ but without the ++ (i.e. objects)
- It is the primary programming language for Unix systems
  - The first Unix systems were written in C
  - Some core Unix code is still in C
- Very Fast!! Very Flexible!!
- Very well supported in the Unix System
  - This also applies to C++
- Very Low Level ☹ => Doesn’t scale well

How to Succeed in Systems Programming!

Forums:

- Use them, help others

Help:

- Contact me directly via email (bernard.evans@adelaide.edu.au)
- Consultation: ??pm (i.e. after the lecture)
- I can do other appointments (if entirely necessary…)

Practice:

- Practice with Bash and C
- Learn everything you can

Where to now?

UNIX!!

Workshops!!

- They start this week