Course Goals

At the end of COMP1521, we hope that you ...

- can think like a systems programmer, with an understanding of the structure of computer systems;
- can describe how computers/programs work at a low-level, with a deep understanding of run-time behaviour; and
- are better able to reason about and debug your C programs

Major themes ...

- software components of modern computer systems
- how C programs execute (at the machine level)
- how to write (MIPS) assembly language
- Unix/Linux system-level programming
- how operating systems are structured
- introduction to concurrency, concurrent programming
- brief overview of virtual memory & caching
Course Syllabus and Topics

- the basic components of a (MIPS) CPU
- how to write programs in (MIPS) assembler
- how (C) data structures are represented at machine level
- how (C) programming language constructs are implemented as (MIPS) assembler
- bit-level operations
- representation of integers in fixed number of bits
- representation of reals in IEEE754 floating point on
- representation of characters as Unicode (UTF-8)
- systems programming, including:
  - file operations
  - processes
- an introduction to threads/concurrency

https://www.cse.unsw.edu.au/~cs1521/22T2/
15% Labs
10% Weekly Programming Tests
15% Assignment 1 — due Monday week 7
15% Assignment 2 — due Monday week 11
45% Final Exam

... above marks may be scaled to ensure an appropriate distribution.

**To pass, you must:**

- score 50/100 overall
- score 18/45 on final exam

For example ... 55/100 overall, 17/45 on final exam ⇒ **55 UF** not 55 PS
Assessment: Labs, Tests

- Labs, in weeks 1-5, 7-10:
  - max lab mark: 2 marks with challenge exercises
  - max lab mark ~1.6 marks without challenge exercises
  - labs marks summed and capped to give mark /15.
  - you can get 99% for lab mark without challenge exercises
  - expectation: most people will get 12+/15

- Tests, in weeks 3...10:
  - max test mark 1.7
  - best 6 of 8 test marks summed and capped to give mark /10.
  - expectation: most people will get 7+/10
A previous COMP1521 Final Exam will be available later tonight!

Will be announced on Edstem.

You can complete it as a practice exam. Autotests available.

Sample answers released Friday 12th August, 12:00pm

22T2 exam will use a format similar for at least some questions.
The 22T2 Final Exam

- Exam will be **Thursday 18 August 09:00 — 12:00** Sydney time
- Exam will be released on class web site at **08:50**, allowing you some time to read the paper.
- You will be emailed a link just before 08:50
- Announcements before and during exam will be sent to your UNSW email.
- Questions during exam can be sent to **cs1521.exam@cse.unsw.edu.au**
- You will not be able to ask question in the class forum
- We will place copies of emailed announcements in the class forum
  - as an alternative for students whose email is not working
- Should look a lot like a weekly test...
  - except three hours long, with more questions and a different difficulty curve
Exam Conditions

During the exam...

- you must not communicate with anyone via any medium, except for COMP1521 staff;
- you must not get help from anyone during this exam, except for COMP1521 staff;
- you must not use code-synthesis tools;
- you must not communicate your exam answers to any other person, even after the end of the exam.

This is an open-book examination:
you may use your papers or books; you may refer to the course website.

You may access the internet in a read-only fashion.
You may not create or modify materials on the Internet.

UNSW has exam prep materials about open-book examinations —
student.unsw.edu.au/open-book-and-take-home-exams

Deliberate violation of exam conditions will be treated as serious misconduct.
Exam Format

- 8-15 questions ... *not* of equal difficulty, *not necessarily* worth equal marks.

- Each question answered in a separate file.

- Some questions may involve writing programs ...
  - some questions may ask you to write C;
  - some questions may ask you to write MIPS;
  - other languages *not* permitted (e.g., Python, C++, Java, Rust, ...)

- Some questions may not involve coding ...
  - some questions may ask for a short answer,
  - similar to tutorial questions.

- Answers will be submitted with *give*. 
For questions that require you to write C or MIPS ...

- Questions will usually include examples.
- You may, or may not, be given starting code, test data, or other files.
- Autotests may be available on submission for some questions. **Passing autotests does not guarantee any marks;** do your own testing. There may be no submission tests for some questions.
- It is *not* sufficient to match any supplied examples.
- Questions may specify additional restrictions or limitations imposed on your program.
Answers will be run through automatic marking software.

- Please follow the input/output format shown exactly.
- Please make your program behave exactly as specified.

Answers that don’t pass all automatic marking tests are hand marked, guided by automarking.

- *no* marks awarded for style or comments ...
- but a human marker will be reading your program.
- comments only necessary to tell the marker something.

Minor errors will result in only a small penalty.

- e.g., an answer correct except for a missing semi-colon would receive almost full marks.

No marks will given unless an answer has a substantial part of a solution (> 33%).

No marks just for starting a question and writing some code.
Answers must be an specified file, e.g. `q1.txt`

Question may specify format of file:

- e.g., 5 integers, one per line ...
- follow this format **exactly**

Question will give you an initial file to complete.

Submit completed file with `give`.
Special Exam Conditions

- Any extra time specified in your ELS exam conditions is allowed in this exam.
- All students see the same exam question text.
- The text shows the standard exam deadline, any extra time is additional to it.
- *give* configured to know about extra time...
  - should show a deadline that *includes* your extra time
- email **cs1521.exam@cse.unsw.edu.au** immediately during exam
  - if you have concerns regarding ELS conditions
- If ELS conditions prevent you taking exam, let us know.
  - Likely outcome: supp in T3 week 0.
Exam clashes

UNSW policy is that you may be required to take two exams in one day.

Exams Unit generally don’t consider all-day exams a clash and special consideration is not generally offered.

If you think you may have an exam clash with overlapping time periods, let us know.
If a problem occurs during the exam, e.g., internet failure:

- Please document the problem as much as possible; e.g., take screenshots
- email **cs1521.exam@cse.unsw.edu.au** ASAP
  - follow any instructions given (e.g. “move to a different question”, “stop the exam”, “submit a special consideration application”).
  - keep us updated as the situation evolves (internet returns, computer reboots, etc).
- you have to contact us (**cs1521.exam@cse.unsw.edu.au**) IMMEDIATELY not an hour later
- When possible have a backup plan:
  - If VScode is down use VLAB.
  - If VLAB is down use SSH, or work local and copy across once the issue is resolved.
- If there is an issue with a question:
  - refresh the exam page (it might have already been fixed).
  - email us **cs1521.exam@cse.unsw.edu.au**.
  - move to a different question.

If the problem is of short duration, we may be able to give you extra time. Otherwise, you will need to apply for special consideration.
This exam is covered by UNSW’s Fit-to-Sit policy.

By starting the exam, you are saying “I am well enough to finish the exam.”

- If you are unwell before the exam:
  see a doctor, apply for Special Consideration.

- If you become unwell during the exam:
  email cs1521.exam@cse.unsw.edu.au ASAP.
    - If you cannot continue the exam, you will need to see a doctor, and apply for Special Consideration.
What should you study for?

- Important Areas to Focus Your Study On...
  - anything covered in a standard lab exercise
  - anything covered in a weekly test
  - anything covered by the assignments

- Less Important Areas
  - may still be questions on these topic but not many
  - challenge lab exercises
  - topics not covered in labs, tests or assignments
  - complex aspects of creating processes / threads

- Explicitly not assessed
  - Caching
  - Virtual memory
Marking will take time — likely 10-12 days.

When marking is complete, exam marks will be available via class marks database. I’ll send email announcing this.

You will receive marks for individual exam questions.

You will have an opportunity to have your marking reviewed.

Final results will appear on myUNSW.

T2 Release of Results: Friday 26 August.
Supplementary Assessment

- If you miss the original exam due to illness/misadventure, you may be eligible for a supplementary exam; apply for special consideration. Schools and individual courses cannot offer supps.

- Students with borderline results are **not** offered supps. (... except potential graduands.)

- Similar format to final exam.

- Supp exams centrally timetabled for sometime near T3 week 0.
What did you like?

One aim of COMP1521 is to give a taste of many topics:

- liked MIPS, Assembly?
  \[ \Rightarrow \text{COMP3222, COMP3211} \ldots \]

- curious about programming languages?
  \[ \Rightarrow \text{COMP3131, COMP3141, COMP3161, COMP6991,} \ldots \]

- liked operating systems?
  \[ \Rightarrow \text{COMP3231/3891, COMP9242,} \ldots \]

- liked concurrency?
  \[ \Rightarrow \text{COMP3151, COMP3153, COMP6721, COMP6991,} \ldots \]

- liked *nix shell?
  \[ \Rightarrow \text{COMP2041} \]
Upcoming Course Offerings (2022 - 2023)

- COMP1531: Software Engineering Fundamentals
  - 22T3, 23T1, ...

- COMP2511: Object-oriented Programming
  - 22T3, 23T1, ...

- COMP2521: Data Structures and Algorithms
  - 22T3, 23T1, ...

- COMP3231: Operating Systems
- COMP3891: Extended Operating Systems
  - 23T1,
Thanks to:

- Our wonderful teaching staff
  - Tutors
  - Lab assistants
  - Forum staff
  - Help session teachers
  - Content improvers
  - Assignment authors
  - Assignment markers
- All of you!
How did we do?
What worked well?
What could we do better?
Let us know: myexperience.unsw.edu.au
myExperience incentive...?
And that’s all!

Good Luck!

- I hope what you’ve learnt in this course will be useful.
- I hope you get the mark you’re aiming for!