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
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 as floating point (IEEE754)
- representation of characters as Unicode (UTF-8)
- systems programming, including:
  - file operations
  - processes
- an introduction to threads/concurrency
- introduction to virtual memory
Assessment

- 15% Labs
- 10% Weekly Programming Tests
- 15% Assignment 1
- 15% Assignment 2
- 45% Final Exam

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
• this is a required course for EE students
  • future study of EE students less heavily on COMP1521 than computing students
  • minimum pass standard for all students is set lower to recognise this
• We manually inspects exam & other work of all students below pass threshold
  • if students who look to have understood basic course material not passing
    exam mark or other components will be scaled up
• COMP1521 is a hard course, but in recent terms pass rate is same as average for level 1 UNSW courses
Assessment: Labs, Tests

- Labs, in weeks 1-5, 7-10:
  - max lab mark each week
    - 1.6 marks without challenge exercises
    - 2 marks with challenge exercises
  - labs marks summed and capped to give mark /15.
  - you can get 96% for lab mark without challenge exercises
  - expectation: most people will get 12+/15

- Tests, in weeks 3...10:
  - max test mark each week:
    - 1.7 marks
  - best 6 of 8 test marks summed and capped to give mark /10.
  - expectation: most people will get 7+/10
Final exam in CSE labs - **Mon 19 August**
- closed book exam — no materials allowed
- but you will have access to online language cheatsheets, documentation & man pages
  - same as weekly tests

**Morning & afternoon sessions**
- students with clashing exam automatically allocated to non-clashing session
- you have been asked to indicate preference
- we will be allocated you to preferred session if possible
- you will receive an e-mail with a link to your allocation mid week 11

**Afternoon session starts before morning session finishes**
- not permitted to leave morning session early
- not permitted to start afternoon session late
- afternoon session allocation will indicate a regular room
- afternoon session people accompanied to lab after morning session finishes
Exam Conditions

- UNSW on-campus exam rules apply
  - see https://www.student.unsw.edu.au/exam/rules
- including:
  - bring your student card (other photo-id if student card lost)
  - phone, smart watch, other electronic devices switched off in your bag
  - you may bring clear water bottle
  - you can not bring your own keyboard/mouse or other hardware
- Deliberate violation of exam conditions will be treated as serious misconduct.
Exam Environment

- Restricted exam environment - not your CSE account
  - similar to default CSE lab environment
- No access to internet
- No access to your files
  - no editor configuration files!
  - Syntax highlighting has been added for you
  - Gedit, Vim, Emacs, Nano, VSCode, all provided as editors: pick your favourite
- Standard CSE lab machine commands available
  - including dcc, mipsy, mipsy web, man
8-12 questions ... *not* of equal difficulty, *not necessarily* worth equal marks.
  - generally, easier questions are towards the start of the exam, harder questions towards the end.
  - but difficulty is subjective, so you might find that some questions are easier then earlier questions.

Each question answered in a separate file.

Most questions will involve writing programs ...
  - some questions may ask you to write C (a `.c` file);
  - some questions may ask you to write MIPS (a `.s` file);
  - other languages *not* permitted (e.g., Python, C++, Java, Rust, ...)

Answers will be submitted with `give`. 
Exam Format — Programming Questions

For questions that require you to write C or MIPS ...

- Questions will include examples.
- You may, or may not, be given starting code, test data, or other files.
  - If you are not given starting code, you must create your own files.
  - The name of the file will be specified in the question.
- Autotests may be available for some questions.
  
  Passing autotests does not guarantee any marks; do your own testing.

There may be no submission tests for some questions.
- If autotests are provided they will run on submission
  - This may be disabled in the last ~10 minutes of the exam.
    - So that submissions are faster to process.
- It is not sufficient to match any supplied examples.
- Questions may specify additional restrictions or limitations imposed on your program.
  - You must follow these restrictions or limitations otherwise you will not receive any marks.
  - Questions with additional restrictions will be hand-marked to ensure you have followed them.
• 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.
    • and you need to read your program
    • so use reasonable style, variable names, …
  • comments only necessary to tell the marker something.
  • do not include your name in comments
• 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 generic code.
• Zero marks for submitting starter code even if it passes some autotests.
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.
  - if in doubt ask exam supervisor
- Email cs1521@cse.unsw.edu.au if you have concerns regarding ELS conditions
- If your ELS conditions prevent you from taking the exam, let us know.
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.
Special Consideration ("Fit-to-Sit")

- 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:
  talk to an exam supervisor ASAP.
A few Final Exam paper will be released Thursday week 10
  * announced on class forum.

You can complete it as a practice exam.
  * Autotests will be available.
  * Submitting your answers with give will not work.

Sample answers released Thursday week 11

24T2 exam will use a format similar for at least some questions.

The Practice Exam from the week 10 Lab will not be released outside of the lab.
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 topics but not many
  • challenge lab exercises
  • topics not covered in labs, tests or assignments
  • complex aspects of creating processes / threads
  • virtual memory
Timeline: Provisional Results

- Marking will take time — likely 10-12 days.
- When marking is complete, exam marks will be available on the course webpage “marks” page. We’ll send email (Ed Announcement) announcing this.
- You will receive marks for individual exam questions.
- You will have an opportunity to have your marking reviewed.
  - marks are reviewed if there is an issue with the marking not because you disagree with the mark you received.
- Final results will appear on myUNSW.
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 will be 24T3 week 0 in CSE labs
What did you like?

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

- liked MIPS, Assembly?
  ⇒ COMP3222, COMP3211 ...

- curious about programming languages?
  ⇒ COMP3131, COMP3141, COMP3161, COMP6991, ...

- liked operating systems?
  ⇒ COMP3231/3891, COMP9242, ...

- liked concurrency?
  ⇒ COMP3151, COMP3153, COMP6721, COMP6991, ...

- liked *nix shell?
  ⇒ COMP2041
COMP1521 — The Bad

- too little time - too many interesting topics
  - not enough coverage of caching
  - not enough coverage of virtual memory
  - no time to fully explore file systems

- Labs: a lot of work, but hopefully you learned a lot

- Assignments: a lot of work, but hopefully you learnt a lot
• Many lab exercises and test questions ... do you agree?
• Tutors and teaching staff
• Students
Thanks to:

- Our wonderful teaching staff
  - Tutors
  - Lab assistants
  - Forum staff
  - Help session teachers
  - Content improvers
  - Assignment authors
  - Assignment markers
- All of you!

https://www.cse.unsw.edu.au/~cs1521/24T2/
• How did we do?

• What worked well?

• What could we do better?

• Let us know: myexperience.unsw.edu.au
  
  • Please give your tutors feedback. myExperience is the best way to give them feedback.
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!