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

Pass Requirements

• 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 inspect exams & 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

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**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.

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**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
Exam Format

- 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 than 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.

Programming Questions — Assessment and Marking

- 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.
Past Paper: Previous Final Exam

• 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!

myExperience

• 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.
Good Luck!

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