COMP1521 25T1 — Course Review, Final Exam

https://www.cse.unsw.edu.au/~cs1521/25T1/

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 $\Rightarrow$ **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 inspects exam & other work of all students below pass threshhold
  - 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

- 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 - **Wed 27 November**
  - 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 were asked to indicate preference
    - allocated you to preferred session if possible
  - you should now have an e-mail with a link to your allocation
- 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

- 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 `cse.exams@unsw.edu.au` if you have concerns regarding ELS conditions
- If your ELS conditions prevent you from taking the exam, let us know.

- 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 sample exams will be released Saturday

    - 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

- 25T1 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.

- 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

- 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.

- 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 exam will be Tue Jan 21 in CSE labs - (supps for most other UNSW courses Jan 6-10)

What did you like?

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

- liked MIPS, Assembly?
  $\Rightarrow$ COMP3222, COMP3211 …

- curious about programming languages?
  $\Rightarrow$ COMP3131, COMP3161, COMP6991, …

- liked operating systems?
  $\Rightarrow$ COMP3231/3891, COMP9242, …

- liked concurrency?
  $\Rightarrow$ COMP3153, COMP6991, …

- liked *nix shell?
  $\Rightarrow$ COMP2041

- too little time - too many interesting topics

  - no coverage of caching & 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 (are learning) a lot

- Many lab exercises and test questions ... do you agree?

- Tutors and teaching staff

- Students

- 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!