COMP1521 24T1 — Course Review, Final Exam

https://www.cse.unsw.edu.au/~cs1521/24T1/

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 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 & caching (will not be on exam)

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

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 99% 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

The 24T1 Final Exam

- Final exam in CSE labs - **Fri 26 April**
  - 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, mipsyweb, man

Exam Format

- 8-15 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, ...)
- Possible some questions may not involve coding ...
  - questions could ask for a short answer,
  - similar to tutorial questions.
- 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 will 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.

Exam Format — Non-coding Questions

- Each question will specify a file to write your answer in.
- Answers must be in the specified file, e.g. **`q1.txt`**
- Question may specify format of file:
  - e.g., 5 integers, one per line ...
  - follow this format **exactly**
- Questions will give you an initial file to complete.

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 previous 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 Monday week 11
- 24T1 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
- Not examinable
  - 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 24T2 week 0 in CSE labs

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, COMP3141, COMP3161, COMP6991, ...
- liked operating systems?
  $\Rightarrow$ COMP3231/3891, COMP9242, ...
- liked concurrency?
  $\Rightarrow$ COMP3151, COMP3153, COMP6721, COMP6991, ...
- liked *nix shell?
  $\Rightarrow$ 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

COMP1521 — The Good

- 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.

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!