# COMP1521 21T2 — Course Review, Final Exam

https://www.cse.unsw.edu.au/~cs1521/21T2/

# 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

# Course Syllabus and Topics

- bit-level operations

- representation of integers & doubles

- the basic components of a (MIPS) CPU

- representation of programs as (MIPS) machine code

- how to write programs in (MIPS) assembler

- how C programs are implemented as (MIPS) instructions

- systems programming, including:
    - file operations
    - processes

- representation of characters as Unicode

- introduction to virtual memory

- introduction to threads/concurrency

# Assessment

- 15% Labs
- 10% Weekly Programming Tests
- 15% Assignment 1 — due week uhhhh
- 15% Assignment 2 — due week 10
- 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 $\Rightarrow$ **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 8...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

- The 20T3 COMP1521 Final Exam is available at:

  https://cgi.cse.unsw.edu.au/~cs1521/21T2/exam/20t3final/questions

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

- Sample answers released Wednesday 11th August, 12:00pm

- 21T2 exam will use a format similar for at least some questions.

{**Friday 13 August 2021, 14:00 — 17:00**}

- Exam will be released on class web site at **13:50**, allowing you some time to read the paper.

- 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`

- We may also announce a second place you can ask questions during exam.

- Should look a lot like a weekly test...

  - except three hours long, and with slightly relaxed conditions.

# 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 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

- 10-15 questions … *not* of equal difficulty, *not* 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*.

# Exam Format — Programming Questions

For question 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.

# 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.

- All answers 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.

# Exam Format — Non-coding Questions

- 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@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 September.

# Other Exams on the Same Day

On 2021-08-13 Friday, there are …

morning  22 exams, 5 with 52 COMP1521 students.

afternoon  44 (other) exams, 0 with COMP1521 students.

evening  2 exams, 1 with 1 COMP1521 student.

No all-day exams clash. Hooray!
(Special Considerations have advised they will not give special consideration for clashes with all day exams).

# If It All Goes Wrong...

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**

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

# 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 sit it."**

- 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**.

    - 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
  - challenge lab exercises
  - topics not covered in labs, tests or assignments
  - may still be questions on these topic but not many
- Even Less Important Areas
  - complex aspects of creating processes
  - creating and manipulating pipes
  - complex signal handling
  - mutexes, semaphores
  - (might or might not be a question on these)

# Timeline: Provisional Results

- 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: 2 Sep 2021, 12:00 AEDT.

- 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 6–10 September 2021 (during T3 week 0...)

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, …

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

- liked concurrency?
  $\Rightarrow$ COMP3151, COMP3153, COMP6721, …

- liked *nix shell?
  $\Rightarrow$ COMP2041

- liked communicating between processes?
  $\Rightarrow$ COMP3331, …

# Upcoming Course Offerings (2021-22)

- COMP1531: Software Engineering Fundamentals
  - 21T3, 22T1, 22T2, 22T3, ...
- COMP2511: Object-oriented Programming
  - 21T3, 22T1, 22T2, 22T3, ...
- COMP2521: Data Structures and Algorithms
  - 21T3, 22T1, 22T2, 22T3, ...
- COMP3231: Operating Systems
  COMP3891: Extended Operating Systems
  - 22T1, ...

(... very likely, but only indicative!)

# COMP1521 — The Bad

- Not enough time to cover so many things...!

- Tuts and Labs need to integrate better.

- Labs: a lot of work, but you learnt a lot

- Assignments: a **lot** of work, but you learnt a lot

- MIPS and its relation to C needs to be better explained

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

- Tutors and teaching staff

- Discourse as a course forum

- Students

{—
How did we do?
What worked well?
What could we do better?
Let us know.
myexperience.unsw.edu.au
—}

**Good Luck!**

- I hope what you've learnt in this course will be useful.

- I hope you get the mark you're aiming for!