Course Goals

At the end of COMP1521, we hope that you . . .

- understand the structure of computer systems
- can describe how computers/programs work at a low-level
- are better able to reason about and debug your C programs

Major topics . . .

- components of modern computer systems
- how C programs execute (at the machine level)
- how to write (MIPS) assembly language
- Unix/Linux system-level programming

Syllabus/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 7
- 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

Labs and Tests

- 8 labs - weeks 2-5,7-10
  - max lab mark 2.3 marks with challenge exercises
  - max lab mark ~1.8 marks without challenge exercises
  - 8 labs marks summed and capped at 15
  - you could get 98% for lab mark without challenge exercises
  - most people will get 12+/15
- 8 tests - weeks 3. . . 10:
  - max test mark 1.7
  - best 6 of 8 test marks summed and capped at to give mark out of 10.
  - most people will get 7+/10

Exam

- Run under same conditions as Weekly Tests

- Except 3 hours and some question may not be coding

- Wednesday 19 August 13:00 — 16:00

- Exam will be released on class web site at 12:50

- Announcements before & 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 2nd place you can ask questions during exam.

Exam Conditions

- You are not permitted to communicate (email, phone, message, talk, ...) to anyone but COMP1521 staff during exam

- You are not permitted to get with anyone but COMP1521 staff during the exam.

- This is a closed book exam: you are not permitted to access papers, books, files on your computer or the internet

- You are permitted to access the exam web pages on the class web site

- You are permitted to access the online language cheatsheets & documentation on the class web site

- Deliberate violation of exam conditions will be treated as serious misconduct

Exam Format

- 12-15 questions

- Each questions answered in a separate file.

- Some questions will ask you to write C.

- Some questions will ask you to write MIPS.

- Other languages not permitted (e.g., Python, C++, Java, Rust, ...)

- Answers will be submitted with give.

- Questions not equal difficulty

- Questions may not be worth equal marks

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 must give you an initial file to complete

- File will be submitted with give.

Coding 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.

- You may or may not be given test data or other files

- 1 or more autotests may be available on submission.

- `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.

Marking of Coding Questions

- 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 use decent formatting so the marker can read the 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 contains a substantial part of a solution ($> 33\%$).

- No marks just for starting a question and writing some code

Special Exam Conditions

- extra time specified in ELS exam conditions is provided in this exam

- other ELS exam conditions will also be allowed

- email `cs1521@cse.unsw.edu.au` if you have concerns regarding ELS conditions

Problems During Exam

- if a problem occurs during the exam, e.g.internet failure

- please document the problem as possible, e.g. take screenshot

- 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'll need to apply for special consideration

Special Consideration — 'Fit to Sit'

- By starting the exam, you are saying
  "I am well enough to sit it".

- If unwell befor exam, see a doctor, apply for Special Consideration.

- If you become unwell during the exam

  - email `cs1521.exam @cse.unsw.edu.au`
  - if you can't continue the exam you will need to see a doctor and apply for Special Consideration.

What to study

- 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 exercise
  - topics not covered in labs, tests or assignments
  - may still be questions on these topic but not many
- Not examinable
  - creating pipes and other complex aspects of creating processes
  - complex signal handling
  - semaphores & file locking

Provisional Results

- Exam marks will be made available via class database when marking is complete.

- I'll send email announcing this.

- Marking will probably take 12 days.

- Your will receive marks for individual exam questions.

- You will be opportunity to have marking reviewed.
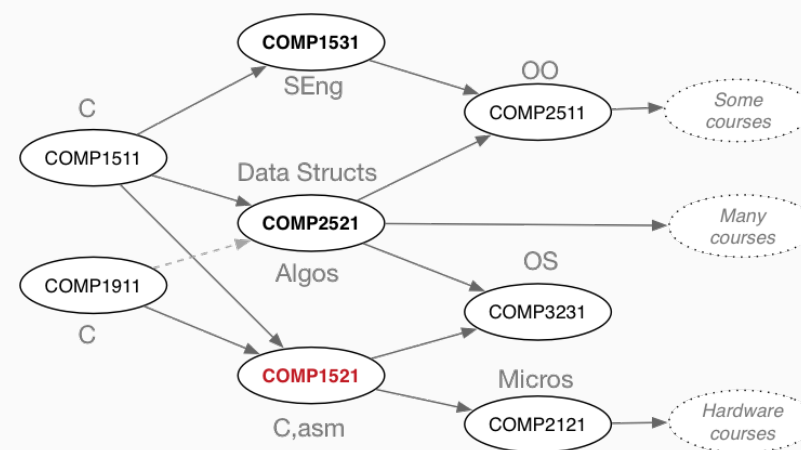
- Final results will appear on myUNSW.

Supplementary Assessment

- UNSW supplementary exams are run centrally.

- Supplementary exams are for students who miss original exam due to illness/misadventure.

- If this is you — apply for special consideration.

- Lecturers & schools can not offer supps.

- Students with borderline results are not offered supps.
  . . . except potential graduands

- Supp exams centrally timetabled for week of 7-14 September

- Similar format to final exam

What did you like?

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

- Liked MIPS/assembly?
  $\Rightarrow$ COMP2121, COMP3222, COMP3211 ...

- Curious about programming languages?
  $\Rightarrow$ COMP3131, COMP3141, COMP3161, ...

- Liked Operating Systems?
  $\Rightarrow$ COMP3231/3891, COMP9242, ...

- Liked Concurrency?
  $\Rightarrow$ COMP3151, ...

- Liked Networking?
  $\Rightarrow$ COMP3331, COMP4336, COMP4337, ...

- Liked Unix shell?
  $\Rightarrow$ COMP2041

Course Context

Course Offerings

COMP1531 Software Engineering Fundamentals

- 2020: term1, term3

COMP2511 Object-oriented Programming

- 2020: term2, term3

COMP2521 Data Structures and Algorithms

- 2020: term1, term2, term3

COMP2121 Microprocessors and Interfacing

- 2020: term1,

COMP3231/3891 Operating Systems

- 2020: term1

COMP1521- The Bad

- MIPS and its relation to C needs to be better

- Not enough time to cover (so) many things

- Labs need more motivation.

- Tuts need to integrate better.

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

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

- Most labs exercises (do you agree??)
- Weekly Tests (do you agree??)
- Tutors
- Discourse
- Students

- Good Luck
- I hope what you've learnt in this course will be useful.
- I hope you get the mark you deserve.