

COMPSCI 210S2C 2013
Computer Systems 1
Introduction

Assoc. Prof. Ian Watson

Lecturers

- Ian Watson (week 1-6)
 - Office 303.567
 - E-mail: ian@cs.auckland.ac.nz
 - Office hours: Thursdays 1:00 – 2:00 pm or by appointment
- Xinfeng Ye (week 7-12)
 - Office 303-589
 - E-mail: xinfeng@cs.auckland.ac.nz
 - Office hours: TBA.

Tutors

- Arash Heidarian ahei844@aucklanduni.ac.nz
- Ahmad Obidat a.obidat@auckland.ac.nz

• Class Representative

TBA (a volunteer please?)

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E-mail Xinfeng/me for

Mistakes in the lecture notes
Dead-links on the webpages
Issues related to course (valid request for extension)

• Tutors

Are available to available to help in tutorials and while hold regular office hours

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Tutorials/Labs

- Tutorials are not compulsory but are **strongly** recommended. All tutorials will **start from week 2**
 - Monday 9:00-10:00 pm in 303S-G75 (Science Main, Room G75)
 - Monday 10:00-11:00 am in 303S-G75 (Science Main, Room G75)
 - Monday 4:00-5:00 pm in 303S-G75 (Science Main, Room G75)
 - Tuesday 12:00-1:00 pm in 303S-G75 (Science Main, Room G75)
- **Tutor's office hours** TBA
- Tutorials will be available online
- Extra material also available online

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Assignments

- There will be two assignments, dates to be announced shortly. The assignments count 20% of your grade.
- With your assignment you will receive clear directives regarding file names & formatting that will be submitted electronically.
- Don't pass your work to someone else; don't copy someone else's work. Do not copy other sources.
- ***If you are caught you will receive zero for the entire assignment and your previous and future submissions will be heavily scrutinised.***
- An assignment incorrectly submitted will not be marked: 0 marks
- For assembly and C, an assignment not compiling will receive 0 marks
- Submissions Deadline: an assignment due date means the assignment should be turned in before midnight on the due date. The submission is regulated by software, which accepts submissions up until midnight.

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Test

- **Wed 17th September**, during regular lecture time
- Venues TBA
- The test will cover all of the material covered in the 1st half of the semester
- The test will be multiple choice questions only

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Miscellaneous

We will have 3 lectures a week

- Each new lecture will require you to know and understand the content of the previous lectures.
- Lectures are tied to content of the textbooks. It is important to read the textbooks
- Test and exam questions may require more detail than is covered in the lectures.
- tutorials are a great way to supplement lectures

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210 Outline

- Bits and Bytes
 - How do we represent information using electrical signals?
- Digital Logic
 - How do we build circuits to process information?
- Computing Engines, Processors and Instruction Sets
 - How do we build a processor out of logic elements?
 - What operations (instructions) will we implement?
- Assembly Language Programming
 - How do we use processor instructions to implement algorithms?
 - How do we write modular, reusable code? (subroutines)
- I/O, Traps, and Interrupts
 - How does a processor communicate with the outside world?
- C Programming
 - How do we write programs in C?
 - How do we implement high-level programming constructs?

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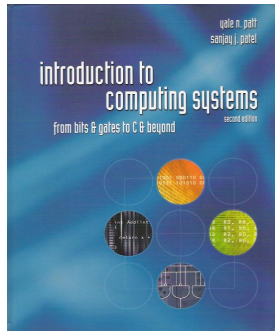
- *It is not so very important for a person to learn facts. For that he does not really need a college. He can learn them from books. The value of an education in a liberal arts college is not learning of many facts but the training of the mind to think something that cannot be learned from textbooks.*

—Albert Einstein

CS210

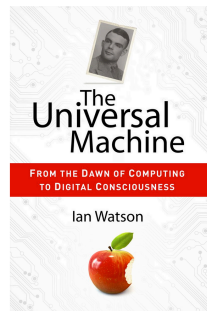
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Textbook



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Textbook



- Available as a free pdf if you are logged on a UoA computer from Springer Link:
<http://link.springer.com/book/10.1007/978-3-642-28102-0>

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Data Representation

Data

- Binary
- Octal
- Decimal
- Signed Numbers

Performing Arithmetic

- Addition
- Subtraction
- Shifting (Mul/Div)

Types and Representation

- Integer
- Floating point -- IEEE format
- Alpha-numeric representation

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Low-level Processes

- ◆ Introduction
- ◆ Digital logic structures
- ◆ Finite state machine
- ◆ ISA/Memory organisation
- ◆ Opcodes
- ◆ Operate instructions, data movement operations
- ◆ Control instructions (loop, if-then-else control)
- ◆ The Assembly process
- ◆ Input & Output
- ◆ Sub-routines / Stacks
- ◆ Coding examples

Note that tutorials will closely follow the course materials progression offering you a chance to apply new knowledge immediately. This will be very important for both assembly and C.

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C programming

- Basic components
 - Data representation
 - Binary fraction
 - Floating point representation
- Introduction to C
- Operators
- Control structure
- Functions
- Pointers, arrays, string
- I/O
- Advanced programming

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Exam

- Multiple-choice questions (MCQ) only
- See examples from previous semesters
- Worth 60% towards course grade

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How to Do Well in CompSci 210

- Read the appropriate part of the textbook before each lecture
- Read the lecture notes after each lecture
- Watch any accompanying videos
- Reread the relevant textbook sections
 - a. To learn more
 - b. To complement lectures

If you have questions or do not understand something

- a. Attend the tutorials
- b. Check Wikipedia for information
- c. Discuss with other 210 students
- d. Ask a tutor during office hours
- e. E-mail the lecturer

How to prepare for exams

- a. Do all the above
- b. Do exercises of the course/tutorials/exercises/textbook
- c. Study previous years' exams: <http://www.cs.auckland.ac.nz/compsci210s1c/exams/>

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