

Programming as problem solving

COMP 1100

Semester 2, 2023

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The Australian National University

`comp1100anu.edu.au`

Introduction to the course

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COMPUTING
DIVISION
COMPUTING
SECTION



$$+ (a^2 - v^2) \frac{\partial v}{\partial y} + \frac{\partial}{\partial v}$$

THESE EQUATIONS

SPACE

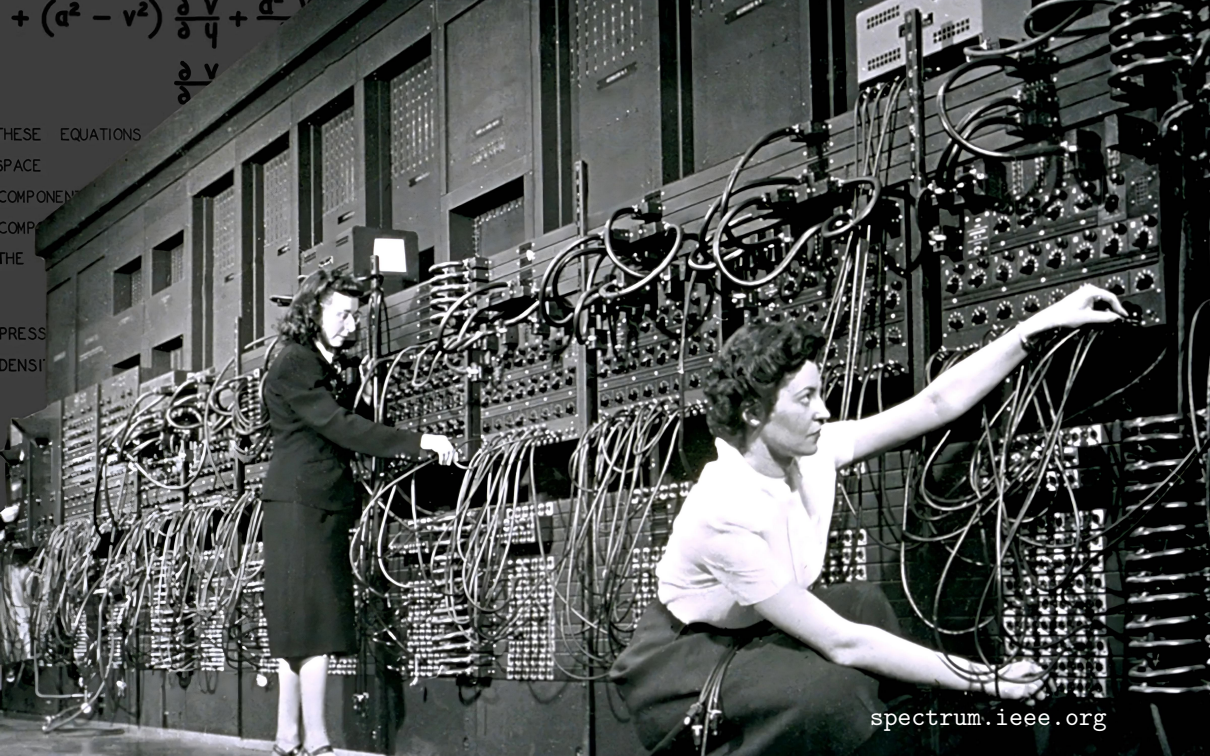
COMPONENTS

COMPO

THE

PRESS

DENSITY



Human vs electronic computers

Human computers ...

- ▶ can be given an algorithm in natural language (e.g. English)
- ▶ can use common sense, domain knowledge, mathematical knowledge

Electronic computers ...

- ▶ are faster at accurately processing large amounts of data
- ▶ only understand very limited, inflexible, notion of “language”
- ▶ have no common sense or domain knowledge
- ▶ so more work (and fun) for the programmer!

The first programmers

- ▶ First working programmers (in the 1940s)
 - Kathleen McNulty
 - Frances Bilas
 - Betty Jean Jennings
 - Ruth Lichterman
 - Elizabeth Snyder
 - Marlyn Wescoff
- ▶ Earlier (1815-52): Ada Lovelace
 - Designed program for Babbage's steam-powered Analytical Engine (never built)

Read more

- ▶ [When computers were women](#) (article)
- ▶ [Hidden Figures](#) (book)



What you will learn

Programming teaches how to think more

- ▶ methodically
- ▶ carefully
- ▶ precisely

(otherwise computer does not do what you want)

What we learn in this course

- ▶ How to use algorithms and programs to solve problems
- ▶ Write, understand, test and debug
- ▶ Types, data structures, polymorphisms

(details in the [learning outcomes](#))

The team

Course convenors

Ranald Clouston



Jim de Groot



Tutors

Jess Allen

Georgia Donoghue

Zofia Francis

Felix Friedlander

Liam Harcombe

Tom La

Peter Oslington

Pramo Samarasinghe

Madeleine Stewart

Liz Yevdokimov

Covid safety

- ▶ ANU advice on covid safety can be found [here](#)
- ▶ Masks are not required, but we support students who choose to wear them
- ▶ If you cannot attend a lab, [email your tutor](#)
- ▶ If you cannot attend an exam you need to seek a [deferred exam](#)

About the course

COMP1100 ...

- ▶ is the entry point for study in Computer Science
- ▶ is a broad course aimed at many different backgrounds and destinations
- ▶ teaches fundamentals of algorithms and programming as means of solving problems
- ▶ introduces many concepts that will be revisited in more depth later in the CS curriculum
- ▶ uses the programming language [Haskell](#)

About the course

COMP1100 is not ...

- ▶ designed for students who wish to do one or two computer science courses during their degree to gain some useable programming skills
 - If that describes you, COMP1730 is strongly recommended
 - If you want to do two such courses, 1730 then 1110 is an option
 - You may use COMP1100 as a taster of “real” computer science
- ▶ designed to teach general computer/IT skills
 - We focus on programming

About the course

No programming experience is required

- ▶ We focus on the principles and foundations of programming in a way that is different from most students' experience

Mathematical maturity is required

- ▶ Comfortable with mathematical thinking (abstraction, algorithms, attention to detail)
- ▶ Building these mathematical skills at the same time as picking up programming skills can be a challenge for some students
- ▶ Students whose mathematics is weaker could consider delaying COMP1100 by one semester, to take e.g. [MATH1005](#) (Discrete Mathematical Models)

About the course

Exiting the Course

- ▶ Easy to do in the first week, picking another course
- ▶ [Census date](#) for withdrawal without fees: 31 August
- ▶ Last day to drop Semester 2 courses without failure: 1 November

Remark on visas

It is **not always true** that withdrawal from a course without replacement will violate your visa; [talk to CECC Student Services](#) if you need information

How to interact with the course

- ▶ **Course website** (lots of info)
- ▶ **Lectures** (and recordings)
- ▶ **Textbook** (not required)
- ▶ **Labs** (useful and fun)
- ▶ **Ed discussion forum** (ask questions and give answers)
- ▶ **Drop-in sessions** (ask questions to tutors)
- ▶ **Email** (only in rare occasions)

How to interact with the course

Course website

- ▶ <https://comp.anu.edu.au/courses/comp1100/>
- ▶ Please **read and understand** all of the [Course Outline](#), for crucial info about
 - assessment
 - late assignment submissions
 - and much more

How to interact with the course

Lectures

- ▶ For the best experience, attend in person!
- ▶ Recordings on [Echo360](#) (if unable to attend in person)

How to interact with the course

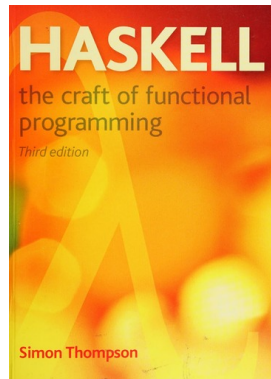
Textbook

Simon Thompson

[HASKELL: the craft of functional programming](#)

(Third edition)

- ▶ **Not** required
- ▶ Provides context
- ▶ Contains lots of [extra exercises](#)
- ▶ [Copies in ANU Library](#) for short-term loan
- ▶ [Pdf download via ANU Library](#)



How to interact with the course

Labs

- ▶ Past students say that the labs are the most useful and most fun part of the course!
- ▶ Tutors there to answer questions and guide your learning
- ▶ Sign up now via [mytimetable](#)

Participation marks

- ▶ 3% of the course linked to
 - attendance and participation in the labs
 - submission of attempts at lab exercises
- ▶ Based on ten best labs
- ▶ Engagement hurdle for COMP1100 can be passed by participating in the labs across the early part of the course

How to interact with the course

Ed discussion forum

- ▶ <https://edstem.org/au/courses/13119>
- ▶ For asking and answering questions
- ▶ Read the [Ed Posting Etiquette post](#) before making any posts

Drop-in consultations with tutors

Starting in week 2

- ▶ Mondays 12pm in N112
- ▶ Wednesdays 12pm in N113
- ▶ Fridays 6pm in N112

How to interact with the course

Email

- ▶ Email your tutor **only if** you have questions specific to your interactions with that tutor (such as lab attendance and assignment marking)
- ▶ Email the lecturers, instead of using Ed Discussions, **only if** you have an issue that tutors could not help with or should not see
 - email to comp1100@anu.edu.au (Ranald and Jim)
 - email from your ANU email address
- ▶ Contact [CECC student services](#) for all enquiries not directly related to this course

Other resources

- ▶ Academic skills
- ▶ Computer Science Student Association (CSSA)
- ▶ [Urgent support services](#)
- ▶ [Student Safety and Wellbeing](#)
- ▶ Overview of support services can be found [in this Ed post](#)

Other resources

InstallFest (CSSA Event)

- ▶ Friday evening
- ▶ see the [CSSA website](#)

Class representative

- ▶ We are looking for 2 course representatives!
 - Act as the official liaison between your peers and convener
 - Be available and proactive in gathering feedback from your classmates
 - Attend regular meetings, provide reports on course feedback to conveners
 - Close feedback loop by reporting back to the class
- ▶ More info from [ANUSA](#)
- ▶ We aim for diverse representation (gender, nationality, degree)
- ▶ To apply, email `comp1100@anu.edu.au` before Friday week 1
 - Briefly write why you might be a good course representative
 - Describe your background or anything that might be relevant
- ▶ We will announce the course representatives in week 2 or 3