



Australian
National
University

COMP1730/COMP6730

Programming for Scientists

Final exam revision

From the very first lecture ...

- ★ As a scientist or engineer, you need to understand how software works, and (most probably) extend it with additional features:
 - to understand algorithms and their computer implementation
 - to interpret and explain the results produced by these
 - to debug programs (find and correct errors)
 - to modify existing programs to solve your (unique) problem
- ★ Main focus of the course has been on developing your **computational thinking** skills (we see this as teaching you “how to fish” instead of “providing you with the fish”)
- ★ From now on, we hope you will be able to approach computationally a novel problem by saying, “Hey, I can just write a program to solve that...”

Course contents (recap)

1st half:

- * Functional decomposition
- * Types, expressions, statements
- * Branching (`if`, `else`, etc.)
- * Iteration (`while` & `for` loops)
- * Sequences (`list`, `tuple`, `str`)
- * Code quality
- * Debugging & testing
- * Data analysis & visualisation

2nd half:

- * NumPy arrays
- * Files, Input/Output
- * Dictionaries and sets
- * Namespaces, scope, recursion
- * Time complexity, big-O notation
- * Exception handling
- * Dynamic programming
- * Modules, command-line parsing
- * Python for genomics and classes
(*not assessed in the exam*)
- * Special topic: CSE
(*not assessed in the exam*)

Final exam date, time, location

- * Date: Tuesday, 14th, November, 2023
- * Time: 15 minutes reading time + 3 hours writing time (incl. uploading files to Wattle and **checking uploaded files**)
 - COMP1730: 9:00am - 12:15pm
 - COMP6730: 2:00pm - 5:15pm
- * Location: CSIT and Hanna Neumann computer labs

Final exam logistics

- * You **MUST** show your **student ID card** (or any other ID card) at the beginning of the exam so that your identity can be validated
- * Exam will be performed on the computer labs
- * Check (e.g., *during week 12 lab*) that you are able to login into the lab computers with your ANU credentials!
- * **We will NOT consider your inability to login into the lab computers as a reason to extend your exam beyond the established 3 hours**
- * Exam will be posted on Wattle in due time
- * Submission of your responses (Python and text files) will be carried out also through Wattle (in the same way as assignments and homeworks)

Final exam logistics (continued)

- * Lab computers environment will include:
 - Spyder
 - PyCharm
 - VSCodium + MS Python and Jupyter extensions (ONLY)
 - Anaconda (Python interpreter + vast array of python libraries)
- * You **WILL NOT** be able to install your own VSCodium extensions
- * Students with special exam arrangements (e.g., in EAP) will have extended time and special conditions

Final exam format

Final exam worths 60% of your final mark

Exercises (24%):

- * Improving code quality (6%)
- * Testing (6%)
- * Debugging (6%)
- * Time complexity (6%)

Programming problems (36%):

- * Problem 1 (9%)
- * Problem 2 (9%)
- * Problem 3 (9%)
- * Problem 4 (9%)

See Lab 10 specification for examples of practice exam exercises and programming problems

Permitted materials

- * Calculator (non-programmable)
- * Course slides. For convenience, you might print them out if you like, but they CANNOT be annotated
- * One A4 page with your own notes on both sides
- * Restricted Internet access. Web sites allowed:
 - <http://cs.anu.edu.au/courses/COMP1730/>
 - <https://wattlecourses.anu.edu.au/>
 - <https://www.pythontutor.com>
 - <https://docs.python.org>
 - <https://numpy.org>
 - <https://matplotlib.org>
 - <https://comp.anu.edu.au/>
 - <https://cs.anu.edu.au>
 - <https://codebench.cecs.anu.edu.au/>
- * All PDFs linked from the course website (e.g., Downey's and Sundnes's book) will also be available

Support before and during exam

- * **Before the exam:** drop-in labs and CSSA study event
 - Tue 7 Nov 12:30 - 2:30pm. Marie Reay 5.02 (also online)
 - Mon 13 Nov 3-5pm. Marie Reay 5.02 (also online)
 - CSSA study event Thu 9 Nov, 5:30-8:30pm. Hancock West (only in person)
- * **Before the exam:** conveners consulting hours (see course webpage, communication, for details)
- * Although exam is centrally invigilated, teaching staff will be available **during the exam** to answer technical questions about the exam

Cheating, plagiarism and misconduct

The exam is individual!

- * Any sign of collaborations or suspicious behaviour will be investigated
- * If you are found with academic misconduct, not only we apply mark penalty, but the record will also be retained at the University
- * Repeated offence may be documented in your transcript!



Questions?

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