COMP1010

Fundamentals of Computer Science

Session 1, In person-scheduled-weekday, North Ryde 2025

School of Computing

Contents

Disclaimer

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General Information

Unit convenor and teaching staff
Convenor and Lecturer
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Lecturer
Greg Baker
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Credit points
10

Prerequisites
COMP1000 or admission to BActStud

Corequisites

Co-badged status

Unit description
This unit studies programming as a systematic discipline and introduces more formal software design methods. Programming skills are extended to include elementary data structures and abstract data types. There is a strong emphasis on problem solving and algorithms, including aspects of correctness, complexity and computability.

Learning in this unit enhances student understanding of global challenges identified by the United Nations Sustainable Development Goals (UNSDGs) Quality Education; Industry, Innovation and Infrastructure

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: apply enhanced problem solving skills to develop algorithms

ULO2: implement programs from algorithms, showing an understanding of control flow

ULO3: adhere to standard software engineering practices, including documentation, unit testing and debugging

ULO4: compare different methods available for the same problem in terms of efficiency and other criteria

ULO5: demonstrate foundational learning skills including active engagement in their learning process

General Assessment Information

SKILLS LAB AND MODULE EXAM

There are two invigilated assessments in this unit

1. **Skills lab (40%)**
2. **Module Exam (40%)**

Students have up to THREE attempts for each of the invigilated assessments.

<u>**Second attempt marks for each invigilated assessments are capped at 84**</u>, which is the upper bound of **Distinction** grade. Only students with marks below **84** can sit the **second** attempt for a given invigilated assessment.

<u>**Third attempt marks for each invigilated assessments exam are capped at 64**</u>, which is the upper bound of **Pass** grade. Only students with marks below **64** can sit the **third** attempt for a given invigilated assessment.

Universal design for learning (UDL) - Invigilated assessments have been designed with universal design strategies in mind, which may remove the need for individual reasonable adjustments. All students will have up to 50% extra time to complete these assessments. This extra time has been applied to all students. Students with IEAP arrangements do not need further overrides, and if they have more questions about UDL, they should contact the accessibility team at accessibility@mq.edu.au.

ASSIGNMENTS

There is one major assignment worth 20% with multiple checkpoints and deliverables. More information will be provided on iLearn.

RELEASE DATES

The latest dates the assignment will be released by are listed below:

- Major Assignment - To be released no later than Sunday 11:55pm Week 7

SGTA PARTICIPATION

Each week there will be extra practice material made available to students who have **actively** participated in their workshops. This is not an attendance requirement.

LATE ASSESSMENT SUBMISSION PENALTY

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a

grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration. For example, if the assignment is worth 8 marks (of the entire unit) and your submission is late by 19 hours (or 23 hours 59 minutes 59 seconds), 0.4 marks (5% of 8 marks) will be deducted. If your submission is late by 24 hours (or 47 hours 59 minutes 59 seconds), 0.8 marks (10% of 8 marks) will be deducted, and so on.

ASSESSMENTS WHERE LATE SUBMISSIONS WILL BE ACCEPTED

- Major Assignment: YES, Standard Late Penalty applies
- Skills Lab: NO
- Module Exam: NO

REQUIREMENTS TO PASS THIS UNIT

Achieve 50 or more marks overall.

SPECIAL CONSIDERATION

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment.

Written Assessments: If you experience circumstances or events that affect your ability to complete the written assessments in this unit on time, please inform the convenor and submit a Special Consideration request through http://connect.mq.edu.au/.

Assessment Tasks

Name	Weighting	Hurdle	Due
Skills Lab	40%	No	W1, W2 teaching recess and W14 in self enrolled sessions
Module Quiz	40%	No	Week 12, 13, and 15 in self enrolled sessions
Major Assignment	20%	No	Sunday 11:55pm Week 12

Skills Lab

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 30 hours
Due: **W1, W2 teaching recess and W14 in self enrolled sessions**
Weighting: **40%**

Students will be assessed on the practical skills in coding.

On successful completion you will be able to:

- apply enhanced problem solving skills to develop algorithms
- implement programs from algorithms, showing an understanding of control flow
- demonstrate foundational learning skills including active engagement in their learning process

Module Quiz

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 30 hours
Due: **Week 12, 13, and 15 in self enrolled sessions**
Weighting: **40%**

End of session quiz on select contents from the entire session

On successful completion you will be able to:

- apply enhanced problem solving skills to develop algorithms
- implement programs from algorithms, showing an understanding of control flow
- demonstrate foundational learning skills including active engagement in their learning process

Major Assignment

Assessment Type [1]: Project
Indicative Time on Task [2]: 25 hours
Due: **Sunday 11:55pm Week 12**
Weighting: **20%**

Major Assignment assesses students on contents from the entire session.

On successful completion you will be able to:

- apply enhanced problem solving skills to develop algorithms
- implement programs from algorithms, showing an understanding of control flow

- adhere to standard software engineering practices, including documentation, unit testing and debugging
- compare different methods available for the same problem in terms of efficiency and other criteria
- demonstrate foundational learning skills including active engagement in their learning process

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

RESOURCES

We have developed several resources that can help you get a headstart as well as assist you over the session to stay on top of the game. These include,

- Practice questions
    - Codingbat: https://codingbat.com/home/gaurav.gupta@mq.edu.au
    - CodeRunner practice questions (on iLearn)
    - Practice Package
    - Software Technology Teaching Material
- YouTube videos
    - https://www.youtube.com/playlist?list=PLA7fpUXGfHnEtL13WVPmz6eYO8QjgT-H1
- Computing Drop-in Centre - The support centre is located in 4RPD G02 across Esc Cafe, and is open every weekday. Although almost all support assistants are proficient in COMP1010, please use the live roster (to be announced on iLearn) to check which sessions have a support person skilled to help with COMP1010.

CLASSES

Each week you should attend

- a two-hour lecture, and,

- a two-hour practical class

For details of days, times, and rooms, consult your personalized timetables page.

WEEK 1 CLASSES

Note that Lectures and Practical classes commence in week 1.

You should have selected a practical class during enrolment. **You should attend the practical class in which you are enrolled**. You won't always get the class of your choice. Teaching staff do not have the ability to move students into their preffered class. Check availabilities via **eStudent** regularly.

TEXTS AND/OR MATERIALS

Lecture notes are available online at https://softwaretechnologymq.github.io/

Practical classes and Video teaching materials: details to be announced via iLearn

RECOMMENDED TEXTBOOKS:

1. **T. Gaddis, Starting out with Java: From control structures through objects (Pearson), Global edition (6th). ISBN 9781292110653**
   - Online edition of this book is available through MQ Library. There can be up to 5 simultaneous accesses.
2. **Kathy Siera, Bert Bates, Head First Java, 2nd edition. ISBN 9780596009205**

TECHNOLOGY USED AND REQUIRED

Audio and Video Lecture

Digital recordings of lectures are available from within iLearn via **Active Learning Platform**.

TECHNOLOGY

- Java SE - download the latest Java SE to be compatible with the labs.
- Visual Studio Code (preferred, troubleshooting provided) or Eclipse (if you are proficient, independent) - the IDEs we shall be using during the session.
- Learning Management System iLearn.
- https://code2flow.com/ for a better understanding of control flow.
- http://codingbat.com/ for programming exercises.
- https://pythontutor.com/java.html for tracing your code.

DISCUSSION BOARDS

The unit makes use of forums hosted within iLearn. Please post questions there, they are monitored by the unit staff.

METHODS OF COMMUNICATION

We will communicate with you via your university email and through announcements on iLearn.

IMPORTANT - Use discussion forums for general queries (that relate to a significant portion of the cohort)

Note that three important themes will pervade the entire unit:

1. **Problem-solving**. A crucial skill for all of the weekly topics will be to write appropriate code to meet a given problem specification. This theme relates to the first two learning outcomes for this unit.

2. **Software development**. The use of JUnit testing framework is an important development practice that will be taught from the beginning and used throughout the unit. This theme relates to the third learning outcome of this unit.

3. **Comparing different solution methods**. Very often different algorithms are available for the same problem. Another important skill to develop throughout this unit is the ability to compare different algorithms in terms of efficiency and other criteria. This theme relates to the fourth learning outcome of this unit.

Unit Schedule

Week	Topic
1	Programming environment,
	Problem-solving,
	JUnit testing
2	ArrayLists
3	ArrayLists
4	Classes and Objects - 1
5	Classes and Objects - 2
6	Classes and Objects - 3
7	TBA

Teaching recess, week 1	Skills Lab Attempt
Teaching recess, week 2	Skills Lab Attempt
8	Recursive Data Structures - 1
9	Recursive Data Structures - 2
10	Recursive Data Structures - 3
11	Recursion
12	Searching and Sorting
13	Revision

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policie s.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/su pport/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.e du.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit connect.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via the Service Connect Portal, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

We value student feedback to be able to continually improve the way we offer our units. As such we encourage students to provide constructive feedback via student surveys, to the teaching staff directly, or via the FSE Student Experience & Feedback link in the iLearn page.

Changes from 2024 S2:

1. SGTA Tasks have been removed
2. Additional practice material is now available through active participation in workshops
3. Module exams have been reduced from 4 to 1
4. A Skills Lab has now been added

Unit information based on version 2025.04 of the Handbook