COMP1010

Fundamentals of Computer Science

Session 2, In person-scheduled-weekday, North Ryde 2023

School of Computing

Contents

General Information

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Credit points 10
Prerequisites (COMP1000 or COMP115) or admission to (BActStud or BActStudBSc or BAppFinBActStud or BActStudBProfPrac)
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.

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

WEEKLY PROGRAMMING QUIZZES

Only quizzes in weeks 3, 6, 9, and 11 are assessed and are worth 5% each. All students will get a chance to attempt the quizzes a second time, and the best of two attempts for each quiz counts towards the final mark. The first attempts are during the practical class. The second attempt will be during sessions in which you can self-enroll. Further details are to be announced on iLearn closer to the date.

PRACTICAL EXAM 1

The first practical exam, structured as a 1-hour closed-book iLearn quiz with CodeRunner questions, will assess students on weeks 1 to 5 lecture (and weeks 1 to 6 Practical class) content. All students will get a chance to attempt the practical exam a second time, and the best of two attempts counts towards the final mark. The first attempt is during the practical class. The second attempt will be during sessions in which you can self-enroll. Further details are to be announced on iLearn closer to the date.

PRACTICAL EXAM 2 HURDLE

The practical exam, structured as a 90-minute closed-book iLearn quiz with CodeRunner questions, during your practical class (or a time organized with the student wellbeing team, if applicable), will assess students on topics discussed over the entire session. All students will get a chance to attempt the practical exam a second time, and the best of two attempts counts towards the final mark. The first attempt is during the practical class. The second attempt will be during sessions in which you can self-enroll. Further details are to be announced on iLearn closer to the date.

IMPORTANT: This is a hurdle exam because it is the only assessment where we assess all topics taught during the session. You must get at least 40 out of 100 to clear this hurdle. If you fail this hurdle exam, you will not pass the unit (even if your raw mark in the unit is 50 or more).

Attempt 1: Week 13 (during registered practical class, or a time organized with the student wellbeing team, if applicable)

Attempt 2: Final exam period (time, and location to be advised around week 12)

ASSIGNMENTS

The assignments will assess students on various topics discussed during the semester. Each assignment is composed of two parts, Part A and Part B.

- Part A (group component) will require you to submit your assignment files online using the relevant submission box on iLearn. Only one group member should make the submission.

- Part B (individual component) will be a live coding session structured as a 40-minute closed-book iLearn quiz with CodeRunner questions, assessed during your registered workshop (or a time organized with the student wellbeing team, if applicable).

Part A will allow for late submission following the standard late submission policy as detailed below. Due to the assessment nature of Part B, **late submissions will not be accepted for Part B.**

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 an assessment is worth 100 marks, and you submit it 15 hours late, getting an original mark of 76, the mark after penalty will be (76 - 5) = 71. If you submit it 26 hours late, the mark would be 66, and so on.

Assessments where Late Submissions will be accepted

- Assignment 1 - Part A: YES, Standard Late Penalty applies
- Assignment 1 - Part B: NO
- Assignment 2 - Part A: YES, Standard Late Penalty applies
- Assignment 2 - Part B: NO
- Weekly Programming Quizzes: NO
- Practical Exam 1: NO
- Practical Exam 2: NO

Requirements to Pass this Unit

1. Achieve 50 or more marks overall.
2. Achieve 40 or more marks in the second practical exam (you have 2 attempts).

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

Assessment Tasks

Name	Weighting	Hurdle	Due
Weekly Programming Quizzes	20%	No	Weeks 3, 6, 9, 11

Name	Weighting	Hurdle	Due
Assignment 1	10%	No	Part A: First week of Teaching Recess. Part B: Week 8
Assignment 2	10%	No	Part A: Week 11. Part B: Week 12
Practical exam 1	20%	No	Week 7 (during registered Prac)
Practical exam 2	40%	Yes	Week 13 (during registered Prac), Final Exam Period (tba)

Weekly Programming Quizzes

Assessment Type [1]: Practice-based task
Indicative Time on Task [2]: 10 hours
Due: **Weeks 3, 6, 9, 11**
Weighting: **20%**

Weekly programming quizzes in the practical classes.

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

Assignment 1

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 20 hours
Due: **Part A: First week of Teaching Recess. Part B: Week 8**
Weighting: **10%**

Assignment 1 assesses students on the first 4 weeks of lecture content.

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
- demonstrate foundational learning skills including active engagement in their learning process

Assignment 2

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 20 hours
Due: **Part A: Week 11. Part B: Week 12**
Weighting: **10%**

Assignment 2 assesses students on contents from the entire semester.

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
- 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

Practical exam 1

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 10 hours
Due: **Week 7 (during registered Prac)**
Weighting: **20%**

Practical exam 1 covers all topics up to and including recursion

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
- 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

Practical exam 2

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 25 hours
Due: **Week 13 (during registered Prac), Final Exam Period (tba)**
Weighting: **40%**
This is a hurdle assessment task (see assessment policy for more information on hurdle assessment tasks)

Practical exam 2 covers topics from the entire semester.

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
- 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

CLASSES

Each week you should attend

- two hours of lectures (details to be announced via iLearn),
- two hour practical class

For details of days, times and rooms, consult the timetables webpage.

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. Check availabilities via **eStudent** regularly. If ALL practical classes are full, only then, contact the convenor.

Please note that you are **required** to submit work regularly. You will get the help that you need by attending your practical class. Failure to submit work may result in you failing the unit (see the precise requirements in the "Grading Standards" section) or being excluded from the final examination.

TEXTS AND/OR MATERIALS

Lecture notes, 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.
- Eclipse (preferred, troubleshooting provided) or Visual Studio Code (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.

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. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

COVID Information

For the latest information on the University's response to COVID-19, please refer to the Coronavirus infection page on the Macquarie website: https://www.mq.edu.au/about/coronavirus-faqs. Remember to check this page regularly in case the information and requirements change during semester. If there are any changes to this unit in relation to COVID, these will be communicated via iLearn.

Unit Schedule

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

NOTE: This is a tentative schedule and is subject to minor changes.

Week	Topic	**Pre-lecture readings** (Section COMP1010)	Assessments Due	Quizzes
1	Programming environment	1, 2		
2	Problem-solving, JUnit testing	3, 4		
3	Classes and Objects - 1	5, 6, 7		Quiz 1 (COMP1000 content) First Attempt (during practical class)
4	Classes and Objects - 2	8, 9, 10		
5	Recursion - 1	11, 12		
6	Recursion - 2	13, 14, 15		Quiz 2 (Classes and Objects) First Attempt (during practical class)
7	List Interface, ArrayList class	16, 17, 18	Practical Exam 1 First Attempt (during practical class)	

	Teaching Recess Week 1		Assignment 1 - Part A (Sunday 11:55 pm)	
	Teaching Recess Week 2		Quizzes 1, 2 and Practical Exam 1 Second Attempts (self-enrollment into sessions TBA)	
8	Recursive data structures - 1	22	Assignment 1 - Part B	
9	Recursive data structures - 2	23		Quiz 3 (ArrayList) First Attempt (during practical class)
10	Stacks and Queues	20		
11	Sorting Algorithm(s)	19	Assignment 2 - Part A (Sunday 11:55 pm)	Quiz 4 (Recursive Data Structures) First Attempt (during practical class)
12	Transition to COMP2010		Assignment 2 - Part B	Quizzes 3 and 4 Second Attempts (self-enrollment into sessions TBA)
13	Transition to COMP2000, 2110		Practical Exam 2 First Attempt (during practical class)	
	Final Exam Period (Date TBA)		Practical Exam 2 Second Attempt (Timetable TBA)	

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.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/support/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.edu.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 ask.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 AskMQ, 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

1. The best of the two attempts for the four assessed quizzes will count towards the final mark.
2. The best of the two attempts for practical exam 1 will count towards the final mark.
3. The best of the two attempts for practical exam 2 (**HURDLE**) will count towards the final mark.
4. Change in weeks when assessments are due.
5. Non-assessed quizzes can be done at home.
6. Assessments are locked until the diagnostic quiz is completed.

Computing Drop-in Centre

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*** In S2, 2022, there was a 10% average improvement in marks for COMP1010 students who used its service ***

*** compared to the ones who didn't (Based on relative diagnostic and final performance) ***

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COMP1010 is supported by the Computing Drop-in Centre that operates daily (weekdays) from,

- 09:00 to 11:00 (trial, at least during the first half of S2 2023),
- 12:00 to 14:00,
- 15:00 to 17:00,
- 18:00 to 20:00 (online)

The web page at https://students.mq.edu.au/study/faculties/science-and-engineering/drop-in-centre contains further information including,

- location,
- the service agreement about what the centre can and cannot help you with,
- week in which the service begins,
- other units supported by the centre,
- roster (as not all time slots will have staff supporting every unit),
- zoom links for the evening sessions.

Changes since First Published

Date	Description
25/10/2023	typo in prac exam 2 fixed
03/10/2023	Tutor and tutorials replaced with teaching staff and teaching materials
11/07/2023	only change: re-arranged assessmewnt tasks.