



MONASH University

FIT9013
Computer programming 2

Unit Guide

Semester 2, 2009

The information contained in this unit guide is correct at time of publication. The University has the right to change any of the elements contained in this document at any time.

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Lecturer(s) / Leader(s):

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Additional communication information:

Unless you have personal enquiries (see below) all communication related to the content of the unit must be via the online Discussion Forums. If you do send the lecturer an email that relates to the content of the unit it might not be answered, or you may be directed to the forum.

Personal enquiries include seeking advice regarding assignment extensions (where warranted by circumstances recognised for special consideration requests), or the need to discuss your personal progress. You are certainly not asked to put anything of a personal nature into forum postings. Personal matters can also be dealt with by telephone.

On-campus students, and off-campus students who live or work near a campus, may also visit their lecturer at their office.

Note: The staff may contact you during the semester, by sending an email to your @student.monash.edu address. You are therefore expected to either check that email regularly (at least twice a week), or have it redirect mail to an address which you are going to check regularly. Also, any email purporting to be from a student which does not come from your Monash email address are allowed to be ignored by the staff member, as sending replies to any other addresses could be a violation of the Privacy provisions of legislation.

Introduction

Welcome to FIT9013 Computer Programming 2. This 6 point unit is a foundation unit for MAIT and Graduate Certificate students. Following on from FIT9008, this unit is intended to supplement the first programming unit to provide you with an understanding of more advanced concepts in object-oriented programming using the Java programming language. This in turn prepares students to go on to the unit GCO3512/FIT9015, which provides a more in-depth study on data structures and algorithms.

Unit synopsis

Following on from FIT9008, this unit introduces more advanced object-oriented programming topics than its prerequisite, such as inheritance and polymorphism. It gives students a deeper understanding of programming and data structures by introducing recursion and dynamic data structures. It also gives more practical skills in designing, building and testing larger computer programs, including ones having graphical user interfaces, and utilising file I/O. Modern software tools to support programming activities of testing and group-based development are also demonstrated.

Learning outcomes

At the completion of this unit, students will:

1. demonstrate an understanding of advanced object-oriented concepts such as inheritance, polymorphism, and abstract classes and interfaces as provided for in Java.
2. be able to create programs that provide a graphical user interface and use event handling.
3. be able to write programs involving abstract and dynamic data structures, and implement algorithms for searching, insertion and deletion.
4. be able to use the collection classes in the Java API.
5. be able to implement algorithms that utilise recursion.
6. have an understanding of design principles for building a multiple-class object-oriented program.
7. be able to implement exception handling techniques
8. be able to use files for persistent storage of data
9. be able to construct test harnesses for multiple-class programs
10. demonstrate an understanding of the range and purpose of modern tools to support the process of programming complex software systems.

Contact hours

4 hrs/week

Further unit information

Lectures at the Gippsland campus will be recorded and available as MP3 downloads from Monash University Lectures Online (<http://mulo.monash.edu.au/>)

Workload

This is a 6 point unit. At Monash, this means that an average student is expected to spend approximately 12 hours per week, all semester, giving attention to this unit. If you do not spend that much time, you will probably not do so well in this unit as you otherwise might and could be at risk of failing the unit.

On campus students are expected to attend all classes to which they have been allocated. This means:

- two-hours worth of lectures each week, and
- two-hour prac class each week

Off-campus students generally do not attend lecture and tutorial sessions, but should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit relationships

Prerequisites

GCO9805 or FIT9008 or equivalent

Students beginning Programming 2 are assumed to:

- + know the difference between a class and an object.
- + be able to read/explain existing Java code (at a basic level)
- + be able to implement a design in Java using multiple interacting classes and techniques such as sequence, selection, repetition, methods and parameter passing, scoping

Prohibitions

GCO9808

Relationships

FIT9013 is an elective in various Masters degrees offered by the Faculty of Information Technology.

It is a prerequisite for FIT9015 and GCO3512.

You may not study this unit if you have already completed any of the following units: GCO9808.

Teaching and learning method

The curriculum is defined by what is covered in the Study Guide modules for each week. All students are expected to work through the study guide modules in preparation for that week's classes.

On campus students will have two classes per week: a lecture/workshop session and a practical lab session. The purpose of the first is to discuss the concepts of that week's curriculum, the purpose of the second is to enable you to apply the concepts by working on problems on a computer.

Assignments are designed to be attempted *after* you have completed all required readings and practical exercises. They are also likely to be another source of learning, although their primary purpose is for staff to assess how well you have progressed in meeting the learning objectives of the unit.

Discussion forums are provided as a place where you may ask questions about the content of the unit. You should also use these to clarify the work required in your assignments. They are checked at least twice per week, and sometimes even more often than that.

Additionally, there may be some quizzes placed online which will allow you to self-test your understanding on some concepts. Announcements will be made when they become available. (These quizzes do not form part of the unit's assessment.)

Students should spend approximately 8 hours per week outside of class for personal study every week, including time programming on a computer and reading the discussion forums.

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, <http://mutts.monash.edu.au/MUTTS/>

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system:
<http://allocate.cc.monash.edu.au/>

Off-Campus Learning or flexible delivery

Off-campus students should refer to the study guide modules as their primary source of direction for studying in this unit. The study guide modules tell you what readings from the textbook to read and convey other thoughts of the teaching staff.

All off-campus students are expected to keep up to the schedule as outlined in this document, and attempt the weekly ungraded practical tasks. You can share/discuss your attempts online, and if you have queries about how to attempt them, post these to the discussion forum.

Unit Schedule

Week	Topic	Study guide	References/Readings	Key dates
1	Revising Java Concepts	Module 1	Reges ch 1-5	Labs commence this week
2	Object Orientation	Module 2	Reges ch 8	
3	Association and Aggregation	Module 3	Reges ch 7 and 10.1	

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	Relationships			
4	Inheritance and Polymorphism	Module 4	Reges ch 9	
5	Interfaces and Abstract Classes	Module 5	Reges ch 9	
6	File I/O and Exceptions	Module 6	Reges ch 6 and 4.5	Assignment 1 due 30/8
7	Abstract Data Types and the Java Collection Classes	Module 7	Reges ch 11	
8	Recursion	Module 8	Reges ch 12	
9	Algorithms for Searching and Sorting	Module 9	Reges ch 13	
10	Event Handling and Graphical User Interfaces	Module 10	Reges ch 14	
Mid semester break				
11	Testing and Debugging	Module 11	Binder ch 1 & 3 (online)	Assignment 2 due 11/10
12	Software Development Tools and Methods	Module 12		
13	Revision	All Modules		

Unit Resources

Prescribed text(s) and readings

Prescribed Text:

- Reges, S. (2008). "Building Java Programs : A Back to Basics Approach", Addison Wesley (ISBN 0-321-38283-8)

Text books are available from the [Monash University Book Shops](#). Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase or order your text book early.

Recommended text(s) and readings

Arnold, K., et al (2006), "The Java Programming Language", 4th edition, Sun Microsystems/Addison-Wesley. (ISBN: 0-321-34980-6)

Required software and/or hardware

Prescribed Software

You must have the Java 2 SE SDK version 1.5.0 (also called Java 5) or later installed on your computer. It can also be downloaded from the internet by going to <http://java.sun.com/javase/downloads/index.jsp>

Other Useful Software

BlueJ

Some locations will be using BlueJ. This also works on Macintosh computers. It can also be downloaded from <http://www.bluej.org/download/download.html>.

JCreator LE

This is an IDE which provides many useful compilation features. It only works on Windows operating systems. The smallish download can be obtained from <http://www.jcreator.com/download.htm>. Be sure to select the LE version 4.5 file, which is free (unless you want to pay for the more comprehensive version).

TortoiseSVN

This open-source software can be downloaded from: <http://tortoisesvn.sourceforge.net/downloads>. (Most users should download the very first file, the 32-bit msi file). There are also language-packs for languages other than english. This tool is explained in week 12 of the semester.

Equipment and consumables required or provided

On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate up to **10** hours per week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:

- This *Unit Information Guide* outlining the administrative information for the unit
- Weekly Study Guides modules
- Weekly slides and sample programs used during lectures
- Weekly practical tasks and solutions
- Assignment specifications and solutions
- Additional electronic resources
- Discussion forums
- The FIT9013 web site on Moodle, where most of the above resources can be located

Assessment

Overview

Examination (3 hours): 60%; Assignments: 40%

Faculty assessment policy

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit's examination, and
- 40% or more in the unit's total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 44% then a mark of no greater than 44-N will be recorded for the unit.

Assignments have a due date and a cutoff date. The due date is that time by which you are required to submit the assignment to receive the grade that it deserves. Submitting after the due date but before the cutoff date means that there will be a penalty applied to your result (typically, a drop in grade by one level). Submissions received after the cutoff date will receive 0 marks. The cutoff date is usually 1 week later than the due date. If you are given an extension, the extension applies to both the due date and the cutoff date.

Assignment tasks

Assignment coversheets

Assignment coversheets are available via "Student Forms" on the Faculty website:

<http://www.infotech.monash.edu.au/resources/student/forms/>

You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

• Assignment task 1

Title:

Assignment 1

Description:

You will be required to develop a multiple-class program which involves the use of concepts from modules 1 to 4.

Weighting:

20%

Due date:

30 August, 2009 at 11:59pm

• Assignment task 2

Title:

Assignment 2

Description:

You will be required to develop a multiple-class program which involves the use of concepts from modules 1 to 10.

Weighting:

20%

Due date:

11 October, 2009 at 11:59pm

Examination

• **Weighting:** 60%

Length: 3 hours

Type (open/closed book): Closed book

See Appendix for End of semester special consideration / deferred exams process.

Due dates and extensions

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.

Refer to the Faculty Special consideration webpage or further details and to access application forms:

<http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html>

Late assignment

Assignments received after the due date will be subject to a penalty of a drop in grade from what it is worth. Assignments received later than one week after the due date will not normally be accepted.

This policy is strict because comments or guidance will be given on assignments as they are returned, and sample solutions may also be published and distributed, after assignment marking or with the returned assignment.

Return dates

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Appendix

Please visit the following URL: <http://www.infotech.monash.edu.au/units/appendix.html> for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams