



MONASH University

CSE9000
Foundations of programming

Unit guide

Semester 2, 2008

Last updated : 26 Jun 2008

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Unit leader :

Judy Sheard

Lecturer(s) :

Caulfield

- Judy Sheard

Tutors(s) :

Caulfield

- Michael Smith
- Judy Sheard

Introduction

Welcome to CSE9000/CPE9001 for semester 1, 2008. This 6 point unit is a core unit for the Master of Applied Information Technology. Computer programming is a fundamental activity underlying all computer systems. A knowledge of programming is therefore important for students interested in a future in information technology.

Unit synopsis

This unit aims to provide students with the basic concepts involved in the development of well structured software using a programming language. It concentrates on the development of problem solving skills applicable to all stages of the development process. Students gain experience with the translation of a problem specification into a program design, and the implementation of that design into a programming language. The subject introduces software engineering topics such as maintainability, readability, testing, documentation, modularisation, and reasoning about correctness of programs. Students are expected to read and understand existing code as well as develop new code. The language used to illustrate and implement the programming principles taught in this unit is Java.

Learning outcomes

At the completion of this unit, you should :

- be competent in designing, constructing, testing and documenting small computer programs using Java;
- be able to demonstrate the software engineering principles of maintainability, readability, and modularisation; and,
- understand the concepts of the "object-oriented" style of programming.

Workload

The workload commitments are:

- two-hour lecture each week;
- two-hour tutorial each week held in a computer laboratory; and
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.

Unit relationships

Prerequisites

There are no prerequisites for this unit.

Relationships

For further details about CSE9000/CPE9001 refer to the Monash Handbook entry for this unit at: <http://www.monash.edu.au/pubs/2006handbooks/units/CSE9000.html>

For information about the course you are enrolled in refer to the Postgraduate Handbook at: <http://www.monash.edu.au/pubs/handbook/postgrad/>

Continuous improvement

Monash is committed to 'Excellence in education' and strives for the highest possible quality in teaching and learning. To monitor how successful we are in providing quality teaching and learning Monash regularly seeks feedback from students, employers and staff. Two of the formal ways that you are invited to provide feedback are through Unit Evaluations and through Monquest Teaching Evaluations.

One of the key formal ways students have to provide feedback is through Unit Evaluation Surveys. It is Monash policy for every unit offered to be evaluated each year. Students are strongly encouraged to complete the surveys as they are an important avenue for students to "have their say". The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

Student Evaluations

The Faculty of IT administers the Unit Evaluation surveys online through the my.monash portal, although for some smaller classes there may be alternative evaluations conducted in class.

If you wish to view how previous students rated this unit, please go to <http://www.monash.edu.au/unit-evaluation-reports/>

Over the past few years the Faculty of Information Technology has made a number of improvements to its courses as a result of unit evaluation feedback. Some of these include systematic analysis and planning of unit improvements, and consistent assignment return guidelines.

Monquest Teaching Evaluation surveys may be used by some of your academic staff this semester. They are administered by the Centre for Higher Education Quality (CHEQ) and may be completed in class with a facilitator or on-line through the my.monash portal. The data provided to lecturers is completely anonymous. Monquest surveys provide academic staff with evidence of the effectiveness of their teaching and identify areas for improvement. Individual Monquest reports are confidential, however, you can see the summary results of Monquest evaluations for 2006 at <http://www.adm.monash.edu.au/cheq/evaluations/monquest/profiles/index.html>

Unit staff - contact details

Unit leader

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Mr Michael Smith

Teaching and learning method

This unit will be delivered via a 2 hour lecture and a 2 hour tutorial class each week.

Lectures will be used to present and explain programming constructs and the fundamentals of program design and testing.

Tutorials will be used for practical experience in the design, coding, testing and debugging of programs.

Tutorial allocation

Students should register for tutorials/laboratories using Allocate+.

Communication, participation and feedback

Monash aims to provide a learning environment in which students receive a range of ongoing feedback throughout their studies. You will receive feedback on your work and progress in this unit. This may take the form of group feedback, individual feedback, peer feedback, self-comparison, verbal and written feedback, discussions (on line and in class) as well as more formal feedback related to assignment marks and grades. You are encouraged to draw on a variety of feedback to enhance your learning.

It is essential that you take action immediately if you realise that you have a problem that is affecting your study. Semesters are short, so we can help you best if you let us know as soon as problems arise. Regardless of whether the problem is related directly to your progress in the unit, if it is likely to interfere with your progress you should discuss it with your lecturer or a Community Service counsellor as soon as possible.

Unit Schedule

Week	Topic	References/Readings	Key dates
1	Introduction to programming, basic OO concepts, objects, classes, methods	Chapter 1, Barnes & Kolling	
2	More OO concepts, class definition, fields, constructors, methods, parameter passing, expressions, statements, scope and lifetime, assignment, expressions, data types, input and output	Chapter 2, Section 2.1-2.12, Barnes & Kolling	
3	Conditions, variables, arithmetic, relational & logical operators, precedence, selection	Chapter 2, Section 2.13-2.18, Barnes & Kolling	
4	Abstraction, class & object diagrams, object creation, method calling, message passing, method overloading	Chapter 3, Barnes & Kolling	
5	Library classes, collections, ArrayLists, Arrays, iteration	Chapter 4, Barnes & Kolling	
6	Testing, unit testing, regression testing, test strategy, debugging	Chapter 6, Barnes & Kolling	
7	Java library, more on strings, more on collections	Chapter 5, Section 5.1-5.9, Barnes & Kolling	Assignment 1 due (15%)
8	Information hiding, class variables,	Chapter 5, Section	

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	constants, class documentation, class design	5.10-5.14, Barnes & Kolling; Chapter 13, Section 13.1-13.3	
9	Coupling, cohesion, refactoring	Chapter 7, Barnes & Kolling	
10	Inheritance, superclass, subclass, subtypes, substitution, wrapper classes, collection hierarchy	Chapter 8, Barnes & Kolling	Assignment 2 part 1 due (hurdle)
11	Static & dynamic types, overriding, method polymorphism	Chapter 9, Barnes & Kolling	
Mid semester break			
12	Method polymorphism, static & dynamic types, overriding, method polymorphism, dynamic method lookup, abstract methods, classes & subclasses, multiple inheritance, interfaces	Chapter 10, Barnes & Kolling	Assignment 2 part 2 due (25%)
13	Revision, exam discussion		

Unit Resources

Prescribed text(s) and readings

Objects First with Java (2005) by Barnes, D.J. & Kölling, M., Pearson Education Limited, 3rd edition.

This is the textbook for the unit. The course will follow this text. The text contains the weekly pre-reading and many exercises that will be specified for you to work on in the tutorial classes and outside class.

The text book is available from the Monash University Bookshop at the Caulfield campus.

Recommended text(s) and readings

The following may provide useful extra reading for this unit. Copies of these are available in the Caulfield Library (on reserve, one day loan or in the normal circulation):

Big Java (3rd edition) by Cay Horstman (John Wiley & Sons), 2008

Java Programming - from Problem Analysis to Program Design (3rd edition), by D. S Malik (Thomson), 2008

Thinking in Java (4th edition) by Eckell (Prentice Hall), 2006

Absolute Java (3rd edition) by Savitch (Addison Wesley), 2008

Java - An Introduction to Problem Solving & Programming (4th edition) by Savitch (Pearson Prentice Hall), 2005

Required software and/or hardware

In this unit we will use Java 5.0 and the BlueJ development environment. This software is available on CD with the text book.

Also:

The Java software is available to download from Sun website at:(http://java.sun.com/javase/downloads/index_jdk5.jsp).

BlueJ is available to download from the BlueJ site at: <http://www.bluej.org/>. You will be given instructions on how to use this in your first tutorial. You are expected to work in the BlueJ development environment. Tutors will only assess the assignments under this environment.

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.

Study resources

Study resources we will provide for your study are:

- Weekly lecture notes;

- Weekly tutorial exercises;
- Weekly readings from the text book;
- Assignment specifications;
- A sample examination;
- Discussion group;
- This Unit Guide outlining the administrative information for the unit;
- The unit web site on MUSO, where resources outlined above will be made available. This site will be updated at least each week so you should access it regularly.

Library access

The Monash University Library site contains details about borrowing rights and catalogue searching. To learn more about the library and the various resources available, please go to <http://www.lib.monash.edu.au>. Be sure to obtain a copy of the Library Guide, and if necessary, the instructions for remote access from the library website.

Monash University Studies Online (MUSO)

All unit and lecture materials are available through MUSO (Monash University Studies Online). Blackboard is the primary application used to deliver your unit resources. Some units will be piloted in Moodle. If your unit is piloted in Moodle, you will see a link from your Blackboard unit to Moodle (<http://moodle.monash.edu.au>) and can bookmark this link to access directly. In Moodle, from the Faculty of Information Technology category, click on the link for your unit.

You can access MUSO and Blackboard via the portal: <http://my.monash.edu.au>

Click on the Study and enrolment tab, then Blackboard under the MUSO learning systems.

In order for your Blackboard unit(s) to function correctly, your computer needs to be correctly configured.

For example:

- Blackboard supported browser
- Supported Java runtime environment

For more information, please visit: <http://www.monash.edu.au/muso/support/students/downloadables-student.html>

You can contact the MUSO Support by: Phone: (+61 3) 9903 1268

For further contact information including operational hours, please visit:
<http://www.monash.edu.au/muso/support/students/contact.html>

Further information can be obtained from the MUSO support site:
<http://www.monash.edu.au/muso/support/index.html>

Assessment

Unit assessment policy

The unit is assessed with two assignments, one class test and a three hour closed book examination. To pass this unit, a student must obtain :

40% or more in the unit's examination and

40% or more in the unit's 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 assessment then a mark of no greater than 44-N will be recorded for the unit.

Assignment tasks

- **Assignment Task**

Title : Assignments 1 & 2

Description :

These assignments will require students to design, write, test and document a program in Java.

Weighting : 15% & 25% respectively

Criteria for assessment :

A criteria for assessment will be provided with the assignment specification.

Due date : Assignment 1 - week 7; Assignment 2 (part 1 and 2) - weeks 10 & 12 respectively

- **Assignment Task**

Title : Tutorial exercises and participation

Description :

Marks will be awarded for completion of specified tutorial exercises and participation in tutorial classes throughout the semester.

Weighting : 10%

Criteria for assessment :

Due date : Assessment will be conducted in each tutorial from weeks 2 to 12

Examinations

- **Examination**

Weighting : 50%

Length : 3 hours

Type (open/closed book) : Closed book

Assignment submission

Assignments 1 and 2 are due to be submitted at the start of the CSE9000/CPE9001 lecture on the weeks specified. Further instructions will be provided with the assignment specifications.

Assignment coversheets

Your assignment must be submitted with the appropriate Assignment Cover Sheet correctly filled out and attached. These are available from the Caulfield School of Information Technology office on level 6 of building H or via the "Student assignment coversheets" (<http://infotech.monash.edu.au/resources/student/assignments/>) page on the faculty website.

University and Faculty policy on assessment

Due dates and extensions

The due dates for the submission of assignments are given in the previous section. 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 seldom regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Late assignment

Assignments received after the submission deadline will be subject to a penalty of 10% per day of the possible marks.

Return dates

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

Assessment for the unit as a whole is in accordance with the provisions of the Monash University Education Policy at <http://www.policy.monash.edu/policy-bank/academic/education/assessment/>

Plagiarism, cheating and collusion

Plagiarism and cheating are regarded as very serious offences. In cases where cheating has been confirmed, students have been severely penalised, from losing all marks for an assignment, to facing disciplinary action at the Faculty level. While we would wish that all our students adhere to sound ethical conduct and honesty, I will ask you to acquaint yourself with Student Rights and Responsibilities (<http://www.infotech.monash.edu.au/about/committees-groups/facboard/policies/studrights.html>) and the Faculty regulations that apply to students detected cheating as these will be applied in all detected cases.

In this University, cheating means seeking to obtain an unfair advantage in any examination or any other written or practical work to be submitted or completed by a student for assessment. It includes the use, or attempted use, of any means to gain an unfair advantage for any assessable work in the unit, where the means is contrary to the instructions for such work.

When you submit an individual assessment item, such as a program, a report, an essay, assignment or other piece of work, under your name you are understood to be stating that this is your own work. If a submission is identical with, or similar to, someone else's work, an assumption of cheating may arise. If you are planning on working with another student, it is acceptable to undertake research together, and discuss problems, but it is not acceptable to jointly develop or share solutions unless this is specified by your lecturer.

Intentionally providing students with your solutions to assignments is classified as "assisting to cheat" and students who do this may be subject to disciplinary action. You should take reasonable care that your solution is not accidentally or deliberately obtained by other students. For example, do not leave copies of your work in progress on the hard drives of shared computers, and do not show your work to other students. If you believe this may have happened, please be sure to contact your lecturer as soon as possible.

Cheating also includes taking into an examination any material contrary to the regulations, including any bilingual dictionary, whether or not with the intention of using it to obtain an advantage.

Plagiarism involves the false representation of another person's ideas, or findings, as your own by either copying material or paraphrasing without citing sources. It is both professional and ethical to reference clearly the ideas and information that you have used from another writer. If the source is not identified, then you have plagiarised work of the other author. Plagiarism is a form of dishonesty that is insulting to the reader and grossly unfair to your student colleagues.

Register of counselling about plagiarism

The university requires faculties to keep a simple and confidential register to record counselling to students about plagiarism (e.g. warnings). The register is accessible to Associate Deans Teaching (or nominees) and, where requested, students concerned have access to their own details in the register. The register is to serve as a record of counselling about the nature of plagiarism, not as a record of allegations; and no provision of appeals in relation to the register is necessary or applicable.

Non-discriminatory language

The Faculty of Information Technology is committed to the use of non-discriminatory language in all forms of communication. Discriminatory language is that which refers in abusive terms to gender, race, age, sexual orientation, citizenship or nationality, ethnic or language background, physical or mental ability, or political or religious views, or which stereotypes groups in an adverse manner. This is not meant to preclude or inhibit legitimate academic debate on any issue; however, the language used in such debate should be non-discriminatory and sensitive to these matters. It is important to avoid the use of discriminatory language in your communications and written work. The most common form of discriminatory language in academic work tends to be in the area of gender inclusiveness. You are, therefore, requested to check for this and to ensure your work and communications are non-discriminatory in all respects.

Students with disabilities

Students with disabilities that may disadvantage them in assessment should seek advice from one of the following before completing assessment tasks and examinations:

- Faculty of Information Technology Student Service staff, and / or
- your Unit Coordinator, or
- [Disabilities Liaison Unit](#)

Deferred assessment and special consideration

Deferred assessment (not to be confused with an extension for submission of an assignment) may be granted in cases of extenuating personal circumstances such as serious personal illness or bereavement. Information and forms for Special Consideration and deferred assessment applications are available at <http://www.monash.edu.au/exams/special-consideration.html>. Contact the Faculty's Student Services staff at your campus for further information and advice.