

FIT9017
Foundations of programming

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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FIT9017 Foundations of programming - Semester 2, 2009

Chief Examiner:

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Senior Lecturer

Phone: +61 3 990 31911

Lecturer(s) / Leader(s):

Caulfield

Mr Michael Smith

Contact hours: To be advised

Introduction

Welcome to FIT9017 Foundations of Programming for semester 2, 2009. 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.

Learning outcomes

At the completion of this unit students will :

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

Contact hours

2 hours of lectures/week, 2 hours of tutorials/week

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

Prohibitions

CSE9000

Relationships

For further details about FIT9017 refer to the Monash Handbook entry for this unit at:
<http://www.monash.edu.au/pubs/2009handbooks/units/FIT9017.html>

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For information about the course you are enrolled in refer to the Postgraduate Handbook at:
<http://www.infotech.monash.edu.au/courses/2009/postgraduate/>

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.

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/>

Unit Schedule

Week	Topic	References/Readings	Key dates
1	Introduction to programming, basic OO concepts, objects, classes, methods	Chapter 1, Barnes & Kolling	Note: Lecture outline and due dates for assessment tasks may be subject to change as semester progresses
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 2.13-2.19, Barnes & Kolling	
4	Abstraction, class & object diagrams, object creation, method calling, message passing, method overloading	Chapter 3, Barnes & Kolling	Exercise on Plagiarism, Cheating and Collusion (Hurdle)
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, constants, class documentation, class design	Chapter 5, Section 5.10-5.14, Barnes & Kolling; Chapter 13, Section 13.1-13.3	Unit Test (10%)
9	Coupling, cohesion, refactoring		

		Chapter 7, Barnes & Kolling	
10	Inheritance, superclass, subclass, subtypes, substitution, wrapper classes, collection hierarchy	Chapter 8, Barnes & Kolling	Assignment 2 - Stage 1 due (3%)
Mid semester break			
11	Static & dynamic types, overriding, method polymorphism	Chapter 9, Barnes & Kolling	
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 - Stage 2 due (22%)
13	Revision, exam discussion		

Unit Resources

Prescribed text(s) and readings

Objects First with Java (2009) by Barnes, D.J. & Kölling, M., Pearson Education Limited, 4th 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):

Java Foundations, Lewis, De Pasquale & Chase, Pearson Education, 2008

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

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

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

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

Required software and/or hardware

In this unit we will use Java 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/>).

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;

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- Weekly readings from the text book;
- Assignment specifications;
- A sample examination;
- 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.

Assessment

Overview

Assignment work: 40%, Unit test: 10 %, Examination: 50 %

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.

The unit is assessed with two assignments, one class test and a three hour closed book examination.

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:

Exercise on Plagiarism, Cheating and Collusion

Description:

Students will complete exercises in class to make sure they are familiar with and fully understand the concepts, rules and issues relating to plagiarism, cheating and collusion with respect to work submitted for assessment in this unit

Weighting:

Hurdle

Due date:

Conducted in Week 4. Date to be advised

• Assignment task 2

Title:

Assignment 1, Assignment 2 - Stage 1 & Assignment 2 - Stage 2

Description:

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

Weighting:

15%, 3% & 22% respectively

Due date:

Assignment 1 - Week 7; Assignment 2 (Stages 1 and 2) - Weeks 10 & 12 respectively. Dates to be advised

• **Assignment task 3**

Title:

Unit Test

Description:

Covering the topics from weeks 1-7

Weighting:

10%

Due date:

Conducted in Week 8. Date to be advised

Examination

• **Weighting:** 50%

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 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.

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