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.

Last updated: 14 Jul 2009
# Table of Contents

**FIT9017 Foundations of programming - Semester 2, 2009**

- Chief Examiner: ............................................................................................................................. 1
- Lecturer(s) / Leader(s): .................................................................................................................... 1
  - Caulfield........................................................................................................................................ 1
- Introduction........................................................................................................................................... 2
- Unit synopsis......................................................................................................................................... 2
- Learning outcomes............................................................................................................................... 2
- Contact hours..................................................................................................................................... 2
- Workload............................................................................................................................................... 2
- Unit relationships............................................................................................................................... 2
- Prohibitions.......................................................................................................................................... 2
- Relationships....................................................................................................................................... 2
- Teaching and learning method........................................................................................................... 4
- Timetable information......................................................................................................................... 4
- Tutorial allocation............................................................................................................................... 4
- Unit Schedule..................................................................................................................................... 4
- Unit Resources..................................................................................................................................... 6
- Prescribed text(s) and readings......................................................................................................... 6
- Recommended text(s) and readings.................................................................................................. 6
- Required software and/or hardware................................................................................................. 6
- Equipment and consumables required or provided......................................................................... 6
- Study resources.................................................................................................................................. 6
- Assessment......................................................................................................................................... 8
- Overview............................................................................................................................................ 8
- Faculty assessment policy.................................................................................................................. 8
- Assignment tasks............................................................................................................................... 8
- Examination........................................................................................................................................ 9
- Due dates and extensions.................................................................................................................... 9
- Late assignment................................................................................................................................. 9
- Return dates....................................................................................................................................... 9
- Appendix.......................................................................................................................................... 10
FIT9017 Foundations of programming - Semester 2, 2009

Chief Examiner:

Dr Angela Carbone
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; anda 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:
FIT9017 Foundations of programming - Semester 2, 2009

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

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>References/Readings</th>
<th>Key dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to programming, basic OO concepts, objects, classes, methods</td>
<td>Chapter 1, Barnes &amp; Kolling</td>
<td>Note: Lecture outline and due dates for assessment tasks may be subject to change as semester progresses</td>
</tr>
<tr>
<td>2</td>
<td>More OO concepts, class definition, fields, constructors, methods, parameter passing, expressions, statements, scope and lifetime, assignment, expressions, data types, input and output</td>
<td>Chapter 2, Section 2.1-2.12, Barnes &amp; Kolling</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Conditions, variables, arithmetic, relational &amp; logical operators, precedence, selection</td>
<td>Chapter 2, Section 2.13-2.19, Barnes &amp; Kolling</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Abstraction, class &amp; object diagrams, object creation, method calling, message passing, method overloading</td>
<td>Chapter 3, Barnes &amp; Kolling</td>
<td>Exercise on Plagiarism, Cheating and Collusion (Hurdle)</td>
</tr>
<tr>
<td>5</td>
<td>Library classes, collections, ArrayLists, Arrays, iteration</td>
<td>Chapter 4, Barnes &amp; Klling</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Testing, unit testing, regression testing, test strategy, debugging</td>
<td>Chapter 6, Barnes &amp; Kolling</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Java library, more on strings, more on collections</td>
<td>Chapter 5, Section 5.1-5.9, Barnes &amp; Kolling</td>
<td>Assignment 1 due (15%)</td>
</tr>
<tr>
<td>8</td>
<td>Information hiding, class variables, constants, class documentation, class design</td>
<td>Chapter 5, Section 5.10-5.14, Barnes &amp; Kolling; Chapter 13, Section 13.1-13.3</td>
<td>Unit Test (10%)</td>
</tr>
<tr>
<td>9</td>
<td>Coupling, cohesion, refactoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### FIT9017 Foundations of programming - Semester 2, 2009

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Chapter 7, Barnes &amp; Kolling</th>
<th>Chapter 8, Barnes &amp; Kolling</th>
<th>Assignment 2 - Stage 1 due (3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Inheritance, superclass, subclass, subtypes, substitution, wrapper classes, collection hierarchy</td>
<td>Chapter 8, Barnes &amp; Kolling</td>
<td>Assignment 2 - Stage 1 due (3%)</td>
</tr>
<tr>
<td></td>
<td>Mid semester break</td>
<td>Chapter 8, Barnes &amp; Kolling</td>
<td>Assignment 2 - Stage 1 due (3%)</td>
</tr>
<tr>
<td>11</td>
<td>Static &amp; dynamic types, overriding, method polymorphism</td>
<td>Chapter 9, Barnes &amp; Kolling</td>
<td>Assignment 2 - Stage 1 due (3%)</td>
</tr>
<tr>
<td>12</td>
<td>Method polymorphism, static &amp; dynamic types, overriding, method polymorphism, dynamic method lookup, abstract methods, classes &amp; subclasses, multiple inheritance, interfaces</td>
<td>Chapter 10, Barnes &amp; Kolling</td>
<td>Assignment 2 - Stage 2 due (22%)</td>
</tr>
<tr>
<td>13</td>
<td>Revision, exam discussion</td>
<td>Chapter 10, Barnes &amp; Kolling</td>
<td>Assignment 2 - Stage 2 due (22%)</td>
</tr>
</tbody>
</table>
Unit Resources

Prescribed text(s) and readings


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), D. S Malik (Thomson), 2008


*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/](http://java.sun.com/javase/downloads/).

BlueJ is available to download from the BlueJ site at: [http://www.bluej.org/](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;
FIT9017 Foundations of programming - Semester 2, 2009

- 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.
FIT9017 Foundations of programming - Semester 2, 2009

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