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**FIT9017 Foundations of programming - Semester 1, 2011**

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FIT9017 Foundations of programming - Semester 1, 2011

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.

Mode of Delivery

- Caulfield (Evening)
- Gippsland (Off-campus)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

For on-campus students, workload commitments are:

- two-hour lecture and
- two-hour tutorial/laboratory requiring advance preparation
- a minimum of 2-3 hours of personal study per one hour of contact time in order to satisfy the reading and assignment expectations.

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

Unit Relationships

Prohibitions

CSE9000

Chief Examiner

Judy Sheard

Campus Lecturer
Learning Objectives

At the completion of this unit students will:

- 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.

Graduate Attributes

Monash prepares its graduates to be:

1. responsible and effective global citizens who:
   a. engage in an internationalised world
   b. exhibit cross-cultural competence
   c. demonstrate ethical values

critical and creative scholars who:

   a. produce innovative solutions to problems
   b. apply research skills to a range of challenges
   c. communicate perceptively and effectively
Assessment Summary

Examination (3 hours): 50%; In-semester assessment: 50%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise on Plagiarism, Cheating and Collusion</td>
<td>0% (compulsory hurdle)</td>
<td>Week 4, date to be advised</td>
</tr>
<tr>
<td>Assignment 1, Assignment 2 (Stage 1) &amp; Assignment 2 (Stage 2)</td>
<td>45% total (15%, 5% &amp; 25% respectively)</td>
<td>Assignment 1 - Week 7; Assignment 2 (Stages 1 and 2) - Weeks 10 &amp; 12 respectively, dates to be advised</td>
</tr>
<tr>
<td>ViLLE exercises</td>
<td>5%</td>
<td>Week 12, date to be advised</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>

Teaching Approach

Lecture and tutorials or problem classes

This teaching and learning approach provides facilitated learning, practical exploration and peer learning.

Feedback

Our feedback to You

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Quiz results

Your feedback to Us

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University's student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash's educational strategy, and on student evaluations, see:
http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this unit

If you wish to view how previous students rated this unit, please go to
Required Resources

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

Also:

The Java software is available to download from the 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.

Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date*</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21/02/11</td>
<td>No formal assessment or activities are undertaken in week 0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28/02/11</td>
<td>Introduction to FIT9017 and expectations; introduction to programming, basic OO concepts, objects, classes, attributes, behaviour, state and identity.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>07/03/11</td>
<td>Class definition, fields, constructors, methods, parameter passing, variables, expressions, statements, assignment, primitive data types, arithmetic operators, strings, basic output.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>14/03/11</td>
<td>Selection (if and switch statements), conditions, relational &amp; logical operators, shorthand operators, ++ operator, precedence, scope and lifetime, basic input.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>21/03/11</td>
<td>Object creation and interaction, abstraction, modularisation, class &amp; object diagrams, object creation, primitive vs. object types, method calling, message passing, method signatures, method overloading.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>28/03/11</td>
<td>Class libraries, importing classes, collections, ArrayLists, arrays, iteration, pre and post test loops.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>04/04/11</td>
<td>Testing, unit testing, testing heuristics, regression testing, debugging.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>11/04/11</td>
<td>Class documentation, Javadoc, identity vs. equality, more on strings, sets and maps, conditional operator.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>18/04/11</td>
<td>Information hiding, encapsulation, access modifiers, scoping, class variables, class methods, constants.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mid semester break</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>02/05/11</td>
<td>Program design, design documentation, testing a program, specifying a test strategy.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>09/05/11</td>
<td>Programming errors, exception handling, file I/O.</td>
<td></td>
</tr>
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</table>

Assignment 1 due Week 7, date to be advised

Assignment 2 (Stage 1) due Week 10, date to be advised
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 50% then a mark of no greater than 49-N will be recorded for the unit.

Assessment Tasks

Participation

• **Assessment 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:** 0% (compulsory hurdle)
  
  **Criteria for assessment:** A criteria for assessment will be provided.
  
  **Due date:** Week 4, date to be advised

• **Assessment task 2**
  
  **Title:** Assignment 1, Assignment 2 (Stage 1) & Assignment 2 (Stage 2)
  
  **Description:**

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<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>16/05/11</td>
<td>Code quality, coupling, cohesion, refactoring.</td>
</tr>
<tr>
<td>23/05/11</td>
<td>Inheritance, superclasses, subclasses, subtypes, substitution, polymorphic variables, protected access, casting, wrapper classes, collection hierarchy. Assignment 2 (Stage 2) due Week 12, date to be advised; ViLLE exercises due Week 12, date to be advised</td>
</tr>
<tr>
<td>30/05/11</td>
<td>SWOT VAC No formal assessment is undertaken SWOT VAC</td>
</tr>
</tbody>
</table>

*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.*
These assignments will require students to design, write, test and document a program in Java.

Weighting:
45% total (15%, 5% & 25% respectively)

Criteria for assessment:
These are individual assignments and must be entirely your own work.

Assessment of these assignments is by interview. You will be asked to demonstrate your system during an interview and can also expect to be asked to explain your system, your code, your design, discuss design decisions and alternatives and modify your code / system as required. Marks will not be awarded for any section of code or functionality that a student cannot explain or modify satisfactorily. (The marker may delete excessive comments in code before a student is asked to explain that code).

For on-campus students, interview times will be arranged in the tutorial labs immediately preceding the submission deadline. It is your responsibility to attend the lab and obtain an interview time. Students who do not attend an interview will receive zero marks for the assignment.

For off-campus-learning students: Off-campus-learning students also have to attend an interview, either by phone or through Skype. It is the responsibility of the student to obtain an interview time immediately prior to the submission of the assignment. Students who do not attend an interview will receive zero marks for the assignment.

Due date:
Assignment 1 - Week 7; Assignment 2 (Stages 1 and 2) - Weeks 10 & 12 respectively, dates to be advised

• Assessment task 3

Title:
ViLLE exercises

Description:
Set exercises in the ViLLE online learning environment to be completed throughout the semester.

Weighting:
5%

Criteria for assessment:
A criteria for assessment will be provided.

Due date:
Week 12, date to be advised

Examinations

• Examination 1

Weighting:
50%

Length:
3 hours

Type (open/closed book):
Closed book

Electronic devices allowed in the exam:
None
Assignment submission

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.

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.


Returning assignments

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

Resubmission of assignments

There will be no resubmission of assignments.

Referencing requirements

Students must reference material used from other sources.

Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash’s Education Policies at: http://policy.monash.edu.au/policy-bank/academic/education/index.html

Key educational policies include:

- Plagiarism (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html)
- Special Consideration (http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html)
- Grading Scale (http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html)
- Discipline: Student Policy (http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html)
- Academic Calendar and Semesters (http://www.monash.edu.au/students/key-dates/)
- Orientation and Transition (http://www.infotech.monash.edu.au/resources/student/orientation/)

and
Student services

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at www.monash.edu.au/students. The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to http://www.lib.monash.edu.au or the library tab in my.monash portal for more information. Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

- Website: http://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

Reading List

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 (4th edition), Cay Horstman (John Wiley & Sons), 2010

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