FIT5170
Programming for distributed, parallel and mobile systems

Unit Guide

Semester 1, 2015

Copyright © Monash University 2014. All rights reserved. Except as provided in the Copyright Act 1968, this work may not be reproduced in any form without the written permission of the host Faculty and School/Department.

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: 29 Jan 2015
# Table of Contents

FIT5170 Programming for distributed, parallel and mobile systems - Semester 1, 2015

- Mode of Delivery ......................................................... 1
- Workload Requirements ............................................... 1
- Unit Relationships ..................................................... 1
  - Prerequisites ............................................................... 1
- Chief Examiner ............................................................ 1
- Campus Lecturer ....................................................... 2
  - Caulfield ................................................................. 2
- Tutors ............................................................................ 2
  - Caulfield ................................................................. 2
- Your feedback to Us .................................................... 2
- Previous Student Evaluations of this Unit .................... 2

## Academic Overview ......................................................................................................................... 3
  - Learning Outcomes .................................................... 3

## Unit Schedule....................................................................................................................................... 4
  - Teaching Approach .................................................... 4
  - Assessment Summary ............................................... 4

## Assessment Requirements.................................................................................................................. 6
  - Assessment Policy ..................................................... 6
  - Assessment Tasks ..................................................... 6
  - Participation .............................................................. 6
  - Examinations ............................................................ 7
    - Examination 1 .......................................................... 7
  - Learning resources ................................................... 8
  - Reading list ............................................................... 8
  - Feedback to you ....................................................... 8
  - Extensions and penalties .......................................... 8
  - Returning assignments ............................................. 8
  - Assignment submission ............................................ 8
  - Online submission ................................................... 9
  - Required Resources ................................................ 9
  - Recommended Resources ........................................ 9

## Other Information............................................................................................................................... 10
  - Policies ................................................................. 10
  - Faculty resources and policies ................................. 10
    - Graduate Attributes Policy .................................... 10
  - Student Charter ....................................................... 10
  - Student services ..................................................... 10
  - Monash University Library ....................................... 10
  - Disability Liaison Unit ............................................ 10
FIT5170 Programming for distributed, parallel and mobile systems - Semester 1, 2015

This unit focuses on the design and programming techniques essential for developing distributed software systems and applications - with Java as the teaching language. The unit presents concurrent programming primitives and concepts for distributed systems. The unit also focuses on application of concurrent techniques in distributed system designs. Programming and implementation issues and techniques of distributed applications are studied. Enabling techniques for building distributed systems are analysed and evaluated. Distributed Software Patterns are presented. The unit also includes case studies of distributed programming paradigms and their applications (e.g. JINI, JavaSpaces).

Mode of Delivery

Caulfield (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

- Two hours of lectures
- One 2-hour laboratory

(b.) Additional requirements (all students):

- A minimum of 8 hours independent study per week for completing lab and project work, private study and revision.

See also Unit timetable information

Unit Relationships

Prerequisites

Recommended knowledge: Some exposure to multithreading. Knowledge of all Java language constructs such as loops, conditionals, methods, classes, inheritance and core Java packages. Use of O/O models such as UML diagrams. Fundamentals of data and computer communication methods and techniques, including ISO and TCP/IP layered protocols.

Chief Examiner

Dr Guido Tack
Campus Lecturer

Caulfield

Dr. Malik Khan

Consultation hours: TBA

Dr. Guido Tack

Consultation hours: TBA

Tutors

Caulfield

Malik Khan

Consultation hours: TBA

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 the Student Evaluation of Teaching and Units (SETU) survey. 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, see:

www.monash.edu.au/about/monash-directions/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html

Previous Student Evaluations of this Unit

This unit is tailored towards introducing technologies and techniques in mobile and distributed system development. Student feedback has informed improvements to this unit including regular updates in unit content to follow the latest trend in this development area.

If you wish to view how previous students rated this unit, please go to
Academic Overview

Learning Outcomes

At the completion of this unit, students should be able to:

- analyse critically and reflect on the concepts and characteristics of distributed and concurrent software;
- identify and evaluate common distributed and concurrent software designs;
- design distributed software applications using typical distributed software architectures;
- write distributed and concurrent software programs.
# Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No formal assessment or activities are undertaken in week 0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Introduction, Java Revision, Threads</td>
<td>NOTE: Tutorial labs commence in Week 1</td>
</tr>
<tr>
<td>2</td>
<td>Architecture, TCP/IP, Sockets</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Protocol Design</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>State Transitions, Half-Object Plus Protocol, Structured Data Formats</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>General Security, Java Security</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>HTTP and Java</td>
<td>Assignment 1 interviews in Week 6 tutorial lab. Assignment 1 due Friday 17th April 2015 11.55PM</td>
</tr>
<tr>
<td>7</td>
<td>RPC and RMI</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CORBA, Introduction to Enterprise JavaBeans</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Web Services</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>JavaSpaces, JMS, JXTA and Multiple Middleware</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mobile Development Platforms, Java for Android Development</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Lecture Revision and Exam Discussion</td>
<td>Assignment 2 due Sunday 31st May 2015 11.55PM</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

## Teaching Approach

### Lecture and tutorials or problem classes

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

## 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>Assignment 1</td>
<td>25%</td>
<td>Interviews in Week 6 tutorial lab. Assignment due Friday 17th April 2015 11:55PM (End of week 6)</td>
</tr>
<tr>
<td>Unit Schedule</td>
<td>Percentage</td>
<td>Date/Time Details</td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>Sunday 31st May 2015 11:55PM (End of Week 12)</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

• Assessment task 1

  Title: Assignment 1

  Description: The design and implementation of a distributed system employing the principles and technologies introduced in the early to mid part of the semester.

  Weighting: 25%

  Criteria for assessment: This is an individual assignment and is to be entirely your own work.

  Assessment for this assignment is by interview. You will be asked to demonstrate your system at an interview in the week following the submission date. At the interview you 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 satisfactorily. (The marker may delete excessive comments in code before a student is asked to explain that code).

  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 0 marks for the assignment.

  Due date: Interviews in Week 6 tutorial lab. Assignment due Friday 17th April 2015 11:55PM (End of week 6)

  Remarks: The details of the task and other requirements will be outlined in the assignment specification.
Assessment Requirements

• Assessment task 2

Title: Assignment 2

Description: This is a theoretical assignment requiring research into selected topic(s) relating to the concepts covered in the lectures. It is done individually by the students.

Weighting: 25%

Criteria for assessment: This is an individual research assignment and is to be entirely your own work.

This assignment tests the students’ ability to build upon the concepts learnt in the lectures, by independently researching the specified individual research topics to be selected area, and reporting upon these clearly and concisely, in their written reports. This requires:

1. Correctness and understanding - there may be more than one “right” answer in many cases. We will look for research component research skills and answers that reflect understanding of the underlying principles and theories.
2. Reporting; process of writing, response to suggestions, Report defence during evaluation and Initiative/independence. And finally writing the Final report with theoretical background. Presentation of results: clarity of tables, figures, Depth and critical analysis, Conclusions are adequately supported by literature, results and use of references.
3. Use of evidence and argument - you are able to explain your position by using logical argument drawing on the theory presented in the unit.

Further detailed assessment criteria will be available with the assignment specification.

Due date: Sunday 31st May 2015 11:55PM (End of Week 12)

Remarks: The details of the task and other requirements will be outlined in the assignment specification.

Examinations

• Examination 1

Weighting: 50%

Length: 3 hours

Type (open/closed book): Closed book

Electronic devices allowed in the exam: None
Learning resources

Reading list


Monash Library Unit Reading List (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

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
- Interviews
- Solutions to tutes, labs and assignments

Extensions and penalties

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

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: http://www.monash.edu.au/exams/special-consideration.html

Returning assignments

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

Assignment submission

It is a University requirement (http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-managing-plagiarism-collusion-procedures.html) for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an electronic submission). Please note that it is your responsibility to retain copies of your assessments.
Assessment Requirements

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Required Resources

Please check with your lecturer before purchasing any Required Resources. Limited copies of prescribed texts are available for you to borrow in the library, and prescribed software is available in student labs.

- MySQL (download from www.mysql.com)
- Java SE 7 (download from www.oracle.com)
- Eclipse IDE with Android SDK (download from www.eclipse.org)

Recommended Resources

- Java SE 7 Tutorial. Online, accessible via http://docs.oracle.com/javase/tutorial/
Other Information

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:

Faculty resources and policies

Important student resources including Faculty policies are located at
http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student Charter


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 http://www.monash.edu.au/students. For Malaysia see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library

The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Malaysia, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.

Disability Liaison Unit

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://www.monash.edu/equity-diversity/disability/index.html
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Malaysia
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Malaysia Campus