FIT5170
Programming for distributed, parallel and mobile systems

Unit Guide

Semester 1, 2013

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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# Table of Contents

FIT5170 Programming for distributed, parallel and mobile systems - Semester 1, 2013...........1

- Mode of Delivery.................................................................1
- Contact Hours.........................................................................1
- Workload requirements...........................................................1
- Unit Relationships.................................................................1
- Prerequisites..........................................................................1

Chief Examiner........................................................................1

- Campus Lecturer.....................................................................1
  - Caulfield..............................................................................1

## Academic Overview.................................................................2

  - Learning Outcomes..........................................................2

## Unit Schedule........................................................................3

  - Assessment Summary......................................................3
  - Teaching Approach..........................................................4

## Assessment Requirements.....................................................5

  - Assessment Policy.........................................................5
  - Assessment Tasks...........................................................5
  - Participation.......................................................................5

  - Examinations......................................................................6
    - Examination 1..............................................................6

  - Learning resources..........................................................6
  - Reading list.........................................................................6
  - Feedback to you..............................................................7
  - Extensions and penalties................................................7
  - Returning assignments.....................................................7
  - Assignment submission..................................................7
  - Online submission........................................................7
  - Required Resources.......................................................7

## Other Information..................................................................9

  - Policies...............................................................................9
    - Graduate Attributes Policy............................................9
  - Student services............................................................9
  - Monash University Library...............................................9
  - Disability Liaison Unit.....................................................10
  - Your feedback to Us.........................................................10
  - Previous Student Evaluations of this Unit.......................10
FIT5170 Programming for distributed, parallel and mobile systems - Semester 1, 2013

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 analyzed 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)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

Student workload commitments are:

- two-hour lecture and
- two-hour tutorial (or 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.

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.

Chief Examiner

Dr Chris Ling

Campus Lecturer

Caulfield

Malik Khan
Academic Overview

Learning Outcomes

At the completion of this unit students will:

- understand 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 due Sunday 21 April 2013 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>
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<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 2 June 2013 11.55PM</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken in SWOT VAC</td>
</tr>
<tr>
<td></td>
<td>Examination period</td>
<td>LINK to Assessment Policy:</td>
</tr>
</tbody>
</table>

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

### 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>Sunday 21 April 2013 11:55PM (Week 6)</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>Sunday 2 Jun 2013 11:55PM (Week 12)</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>
Unit Schedule

**Teaching Approach**

**Lecture and tutorials or problem classes**

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

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see the Demystifying Citing and Referencing tutorial at http://lib.monash.edu/tutorials/citing/

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.

  Further detailed assessment criteria will be available with the assignment specification

  Due date: Sunday 21 April 2013 11:55PM (Week 6)

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

• Assessment task 2

  Title: Assignment 2

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

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

**Due date:**
Sunday 2 Jun 2013 11:55PM (Week 12)

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

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**Examinations**

- **Examination 1**

  **Weighting:**
  50%

  **Length:**
  3 hours

  **Type (open/closed book):**
  Closed book

  **Electronic devices allowed in the exam:**
  None

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**Learning resources**

**Reading list**

Assessment Requirements

Recommended Reading

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

Monash Library Unit Reading List
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

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:

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/plagiarism-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 online quiz).

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)
Assessment Requirements

- Java SE 7 (download from www.oracle.com)
- Eclipse IDE with Android SDK (download from www.eclipse.org)
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: www.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/dates/
- Orientation and Transition; http://intranet.monash.edu.au/infotech/resources/students/orientation/

Graduate Attributes Policy

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

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 Sunway 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 Sunway, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.
Other Information

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 Sunway
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, Sunway Campus

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