FIT5183
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.

Last updated: 04 Mar 2013
FIT5183 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 analysed and evaluated. Distributed Software Patterns are presented. The unit also includes case studies of distributed programming paradigms and their applications.

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)
- up to three hours per week of preparation including lecture material
- a minimum of three hours per week personal study in order to satisfy the reading and assignment expectations - you will need to allocate up to five hours per week in some weeks

Unit Relationships

Prerequisites

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 Jue Xie

Campus Lecturer
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>Unit Introduction on Web (No Lecture)</td>
<td>No formal assessment or activities are undertaken in week 0</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>
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<tr>
<td>3</td>
<td>Protocol Design</td>
<td></td>
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<tr>
<td>4</td>
<td>State Transactions, Half-Object Plus Protocol,</td>
<td>Assignment 1 due Friday 5 April 2013 11:55PM</td>
</tr>
<tr>
<td></td>
<td>Structured Data Formats</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>General Security, Java Security</td>
<td></td>
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<tr>
<td>6</td>
<td>HTTP and Java</td>
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<tr>
<td>7</td>
<td>RPC and RMI</td>
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<tr>
<td>8</td>
<td>CORBA, Introduction to EJBs</td>
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<tr>
<td>9</td>
<td>Web Services</td>
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<tr>
<td>10</td>
<td>Java Message Service, Multiple Middleware</td>
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<tr>
<td>11</td>
<td>Mobile Development Platforms, Java for Android</td>
<td>Assignment 2 due Friday 24 May 2013 11:55PM</td>
</tr>
<tr>
<td></td>
<td>Development</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Lecture Revision and Exam Discussion</td>
<td></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: <a href="http://policy.monash.edu.au/policy-bank/">http://policy.monash.edu.au/policy-bank/</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>academic/education/assessment/assessment-in-coursework-policy.html</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>Friday 5 April 2013 11:55PM</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>25%</td>
<td>Friday 24 May 2013 11:55PM</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.
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.

  Due date: Friday 5 April 2013 11:55PM
  Remarks: The details of the task and other requirements will be outlined in the assignment specification.

• Assessment task 2

  Title: Assignment 2
  Description:
Assessment Requirements

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:**
Friday 24 May 2013 11:55PM

**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


Recommended Reading
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)
- 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/.
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

Based on previous student feedback this unit is well structured and no changes have been made this for semester.

If you wish to view how previous students rated this unit, please go to https://emuapps.monash.edu.au/unitevaluations/index.jsp