



MONASH University
Information Technology

FIT5183
Programming for distributed, parallel and mobile systems

Unit Guide

Semester 2, 2012

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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FIT5183 Programming for distributed, parallel and mobile systems - Semester 2, 2012

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, 2-4 hrs/wk independant study/working on assignments/completing tutorial exercises.

Workload

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

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.

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%

Assessment Task	Value	Due Date
Assignment 1	25%	Friday 27 July 2012 11:55PM (Week 6)
Assignment 2	25%	Friday 14 September 2012 11:55PM (Week 12)
Examination 1	50%	To be advised

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
- Interviews

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.monash.edu.au/about/monash-directions/directions.html>

<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

<https://emuapps.monash.edu.au/unitevaluations/index.jsp>

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.

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

Unit Schedule

Week	Activities	Assessment
0	Unit Introduction on Web (No Lecture)	No formal assessment or activities are undertaken in week 0
1	Introduction, Java Revision, Threads	NOTE: Tutorial labs commence in week 1
2	Architecture, TCP/IP, Sockets	
3	Protocol Design	
4	State Transactions, Half-Object Plus Protocol, Structured Data Formats	
5	General Security, Java Security	
6	HTTP and Java	Assignment 1 due on Friday 27 July 2012 11:55PM
7	RPC and RMI	
8	CORBA, Introduction to Enterprise JavaBeans	
9	Web Services	
10	JavaSpaces, JMS, JXTA and Multiple Middleware	
11	Mobile Development Platforms, Java for Android Development	
12	Lecture Revision and Exam Discussion	Assignment 2 due on Friday 14 September 2012 11:55PM
	SWOT VAC	No formal assessment is undertaken during SWOT VAC
	Examination period	LINK to Assessment Policy: http://policy.monash.edu.au/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html

*Unit Schedule details will be maintained and communicated to you via your MUSO (Blackboard or Moodle) learning system.

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

(<http://www.infotech.monash.edu.au/resources/staff/edgov/policies/assessment-examinations/unit-assessment-hu>)

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:

Friday 27 July 2012 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:

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 14 September 2012 11:55PM (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

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 VLE site for this unit, which you can access via links in the my.monash portal.

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.infotech.monash.edu.au/resources/student/equity/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.

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:

<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>)
- Assessment
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-p>)
- Special Consideration
(<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.h>)
- 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
- Academic and Administrative Complaints and Grievances Policy
(<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy>)
- Codes of Practice for Teaching and Learning
(<http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea>)

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. For Sunway see <http://www.monash.edu.my/Student-services>, and for South Africa see <http://www.monash.ac.za/current/>

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. 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/>.

Academic support services may be available for students who have a disability or medical condition. Registration with the Disability Liaison Unit is required. Further information is available as follows:

- Website: <http://monash.edu/equity-diversity/disability/index.html>;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus
- Telephone: 03 9905 5704, or contact the Student Advisor, Student Community Services at 03 55146018 at Sunway

Reading list

- Graba J. (2006) An Introduction to Network Programming with Java, 2nd edition, Springer [electronic resource].
- Horstmann C.S., Cornell G. (2005) Core Java™ 2 Volume II - Advanced Features, 7th edition, Prentice Hall [electronic resource].
- Horstmann C.S. (2010) Big Java, 4th edition, Wiley.
- Coulouris G., Dollimore J., Kindberg T., Blair G. (2012). Distributed Systems, Concepts and Design, 5th edition, Addison-Wesley.

Other

- Java SE 7 Tutorial Online, accessible via <http://docs.oracle.com/javase/tutorial/>
- Java EE 6 Tutorial. A pdf document is available at <http://docs.oracle.com/javaee/6/tutorial/doc/javaeetutorial6.pdf>