**FIT3011**
**Enterprise programming**


**Unit Guide**

**Semester 1, 2011**

*Last updated: 27 Feb 2011*

# Table of Contents

# FIT3011 Enterprise programming - Semester 1, 2011

This unit covers: Distributed database systems: clients, servers, application servers; Database servers, clusters of servers; Distributed database architectures: single-tier, two-tier, multi-tier; Implementation issues: performance, security, transactions; Enterprise application server capabilities: hot deployment, clean shutdown, clustering, farming, load balancing, automatic fail-over; Enterprise application coding: DBMS access, distributed components, messaging services, authentication, authorisation, encryption, transactions; and Enterprise application software development tools. Access to the Universitys computer systems through an Internet service provider is compulsory for off-campus students.

## Mode of Delivery

Sunway (Day)

## Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

## Workload

The workload commitments for this unit is 12 hours per week.

For on-campus students: 2 hours of lectures, 2 hours of computer laboratories, plus 8 hours of private study and programming.

## Unit Relationships

### Prohibitions

CSE3450, GCO3823, GCO4823

### Prerequisites

FIT1007 or GCO1812 or FIT2034 or equivalent.

## Chief Examiner

**Thomas O'Daniel**

## Campus Lecturer

### Sunway

**David Hong**

Contact hours: Announced in Week 1

# Learning Objectives

At the completion of this unit students will:

- understand the various ways in which a database application may be scaled to the enterprise level, including: applications being split between clients and servers; servers being split between application servers and database servers; application servers being split into clusters of application servers;
- be able to evaluate the advantages and disadvantages of single-tier, two-tier and multi-tier architectures;
- be aware of some of the pitfalls (and ways to avoid or minimise them) of distributed applications, including: performance problems due to network latency and bandwidth; security problems when transmitting data over an untrusted network; transactional problems when transactions must be distributed over multiple servers;
- be able to evaluate when it is appropriate to use enterprise programming techniques, and when simpler solutions will suffice.
- be able to configure an enterprise application and application server to take advantage of advanced capabilities such as: hot deployment; clean shutdown; clustering; farming; load balancing; automatic fail-over;
- be able to design and implement an enterprise application that makes appropriate use of the following: DBMSs; distributed components; messaging services; security (authentication, authorisation and encryption); transactions; fat clients; thin (web) clients;
- be familiar with a selection of software tools (both GUI and command-line) to speed enterprise application development;
- accept the importance of client and server operating system platforms other than Windows, and therefore the need for technologies that support multiple platforms;
- appreciate the value that an application server adds to an application with remarkably little additional coding effort.

# 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): 60%; In-semester assessment: 40%

| Assessment Task | Value | Due Date |
|---|---|---|
| Assignment 1 | 16% | 21 April 2011 |

| Assignment 2 | 24% | 27 May 2011 |
| Examination 1 | 60% | 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

## 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

JBoss 4 and related software (Java, Ant, XDoclet etc).

This is open source/community supported software that is freely available. It will be installed in the labs, or you can download it yourself.

- JBoss AS 4.2.3 or later (http://www.jboss.org/jbossas)
- J2EE 1.4.0 or later + JDK 1.5 (now known as JDK 5) or better
  http://java.sun.com/javaee/downloads/previous_j2ee/
- Apache Ant is shipped with the JBoss Application Server source files, XDoclet comes with the JDK.
- You may also like JBoss Tools [ Eclipse Plugins]  (http://www.jboss.org/tools)

# Unit Schedule

| Week | Date* | Activities | Assessment |
|---|---|---|---|
| 0 | 21/02/11 | | No formal assessment or activities are undertaken in week 0 |
| 1 | 28/02/11 | Introduction | |
| 2 | 07/03/11 | A first J2EE application | |
| 3 | 14/03/11 | Software development tools | |
| 4 | 21/03/11 | Container-managed persistence | |
| 5 | 28/03/11 | More on CMP entity beans | |
| 6 | 04/04/11 | Web components | |
| 7 | 11/04/11 | Container-managed relationships | |
| 8 | 18/04/11 | Security | Assignment 1 due 21 April 2011 |
| | | Mid semester break | |
| 9 | 02/05/11 | Transactions | |
| 10 | 09/05/11 | Message-driven beans and MOM | |
| 11 | 16/05/11 | Advanced topics | |
| 12 | 23/05/11 | Sample exam | Assignment 2 due 27 May 2011 |
| | 30/05/11 | SWOT VAC | No formal assessment is undertaken in SWOT VAC |

*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.

# 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:**
  Assignment 1
  **Description:**
  Development of a command-line based enterprise application for a client server architecture.
  **Weighting:**
  16%
  **Criteria for assessment:**
  Correctness, Robustness, User Interface, Efficiency, Simplicity, Modularity and Layout.

  These will be detailed in the assignment preparation guide of the unit book.
  **Due date:**
  21 April 2011

- ## Assessment task 2

  **Title:**
  Assignment 2
  **Description:**
  Development of a web-based enterprise application for a client server architecture.
  **Weighting:**
  24%
  **Criteria for assessment:**
  Correctness, Robustness, User Interface, Efficiency, Simplicity, Modularity, Layout, Transactions, Authentication and Authorization, and Multiuser.

  Most of these will be detailed in the assignment preparation guide.
  **Due date:**
  27 May 2011

# Examinations

- ## Examination 1

  **Weighting:**
  60%
  **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.

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

## 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-po
- 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.

## 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.

**Recommended Reading**

Monson-Haefel, Burke and Labourey, *Enterprise JavaBeans*, Fourth Edition, O'Reilly, 2004, ISBN 059600530X.

Sierra and Bates, *Head First EJB (Brain-Friendly Study Guides; Enterprise JavaBeans)*, O'Reilly, 2003, ISBN 0596005717.

Boone, *Applied Enterprise JavaBeans Technology*, Prentice Hall, 2002, ISBN 0130449156.

Wutka, *Special Edition Using Java 2 Enterprise Edition*, Que, 2001, ISBN 0789725037.

Marinescu, *EJB Design Patterns*, Wiley, 2002, ISBN 0471208310.

Alur, Malks and Crupi, *Core J2EE Patterns: Best Practices and Design Strategies*, Second Edition, Prentice Hall, 2003, ISBN 0131422464.