FIT3011
Enterprise programming

Unit Guide

Semester 1, 2014

Last updated: 20 Feb 2014

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FIT3011 Enterprise programming - Semester 1, 2014

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.

Mode of Delivery

Malaysia (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.

Unit Relationships

Prohibitions

CSE3450, GCO3823, GCO4823

Prerequisites

FIT1007 or GCO1812 or FIT2034 or equivalent.

Chief Examiner

Mr Sylvester Olubolu Orimaye

Campus Lecturer

Malaysia

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Tutors

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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

Additional resources such as community-supported software and textbooks have been introduced to the unit for this semester. It is expected that those resources will improve students learning experience through guided study and practical demonstrations.

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

Academic Overview

Learning Outcomes

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.

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Introduction to developing enterprise applications	
2	Software management practices and agile development	
3	Software design patterns	
4	Introduction to software modularization with OSGi	
5	Enterprise Software Modularization with OSGi	
6	Software quality and continuous improvement	Assignment - First milestone due
7	Logging and persistence	
8	Messaging and Message Brokering	
9	Authentication and authorization services	
10	Unit and UA testing	
11	Systems testing, mocking and debugging	Assignment - Second milestone due
12	Exam review	
	SWOT VAC	No formal assessment is undertaken in 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 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): 60%; In-semester assessment: 40%

Assessment Task	Value	Due Date
Assignment - First milestone	20%	Week 6
Assignment - Second milestone	20%	Week 11
Examination 1	60%	To be advised

Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles
(http://intranet.monash.edu.au/infotech/resources/staff/edgov/policies/assessment-examinations/assessment-hurd

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

Assessment Tasks

Participation

Group project that demonstrates the practical application of knowledge gained through the course material. The group project will be assessed on an ongoing basis, with the first phase due in Week 6 and the final phase due in Week 11.

- **Assessment task 1**

    Title:
    Assignment - First milestone
    Description:
    Development of an enterprise application for a client server architecture.
    Weighting:
    20%
    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.

    The centralised project management system at www.pivotaltracker.com will be used to distinguish individual contributions to group work.
    Due date:
    Week 6

- **Assessment task 2**

    Title:
    Assignment - Second milestone
    Description:
    Development of a web-based enterprise application for a client server architecture.
    Weighting:
    20%
    Criteria for assessment:
    Correctness, Robustness, User Interface, Efficiency, Simplicity, Modularity, Layout, Multiuser, Transactions, Authentication and Authorization.

    Most of these will be detailed in the assignment preparation guide.

    The centralised project management system at www.pivotaltracker.com will be used to distinguish individual contributions to group work.

Due date:
Week 11

Examinations

• **Examination 1**

Weighting:
60%
Length:
3 hours
Type (open/closed book):
Closed book
Electronic devices allowed in the exam:
None

Learning resources

Reading list

Reading list and additional resources will be continuously updated on Moodle.

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

Faculty of Information Technology Style Guide

Feedback to you

Examination/other end-of-semester assessment feedback may take the form of feedback classes, provision of sample answers or other group feedback after official results have been published. Please check with your lecturer on the feedback provided and take advantage of this prior to requesting individual consultations with staff. If your unit has an examination, you may request to view your examination script booklet, see
http://intranet.monash.edu.au/infotech/resources/students/procedures/request-to-view-exam-scripts.html

Types of feedback you can expect to receive in this unit are:

• Informal feedback on progress in labs/tutes
• Graded assignments with comments

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-pla 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). Please note that it is your responsibility to retain copies of your assessments.

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.

This is community-supported software - it will be available in the labs or you can download and install it yourself.

- Netbeans or Eclipse [Development Environment]
- Eclipse Virgo or Apache Felix [OSGi Servers]
- Apache Aries
- IBM WebSphere Application Server Community Edition or Apache Geronimo
- Jenkins   [CI Server]
- RabbitMQ (with STOMP)   [Message Broker]
- Apache Maven 3.x [Build Tool]
- Apache JackRabbit   [Content Repository]
- Log4J and LogBack [Logging]
- Junit 4.x and EasyMock [Testing]
- Groovy [Scripting]
- TortoiseSVN or another SVN client [Version Control]
- Web Browser for updating project status

Recommended text(s)

Richard S Hall; Peter Kriens. (2011). *OSGi in action : creating modular applications in Java*. () Greenwich, Conn. : Manning ; London : Pearson Education distributor (ISBN: 9781933988917 (pbk.) ; 1933988916 (pbk.)).

Kyle Brown. (2003). *Enterprise Java programming with IBM WebSphere*. (2nd ed.) Boston, MA : Addison-Wesley/Pearson Education .

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:

- Student Academic Integrity Policy and Student Academic Integrity: Managing Plagiarism and Collusion Procedures ;
  http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-academic-integrity-policy.h
- Assessment in Coursework Programs;
  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.ht
- 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/
- Academic and Administrative Complaints and Grievances Policy;
  http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.h

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.h

Student Charter

www.opq.monash.edu.au/ep/student-charter/monash-university-student-charter.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 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 Commuity 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

Other

Consultation Hours: Mondays, 2pm - 4pm