



MONASH University
Information Technology

FIT4038
Database management and implementation

Unit Guide

Semester 1, 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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FIT4038 Database management and implementation - Semester 1, 2012

This unit looks at the design and implementation issues of database management systems. Advanced database design using the object-relational approach and multi-dimensional database design are explored. Record, file and index structures are dealt with at the basic level. Higher level details of consistency, atomicity and durability are introduced along with modern trends in databases.

Mode of Delivery

Caulfield (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

Students will be expected to spend a total of 12 hours per week during semester on this unit as follows:

For on-campus students:

Lectures: 2 hours per week

Tutorials/Lab Sessions: 2 hours per week per tutorial

and up to an additional 8 hours in some weeks for completing lab and project work, private study and revision.

Unit Relationships

Prohibitions

FIT3118, CSE3000

Prerequisites

FIT9019 or FIT9003

Knowledge of relational database principles, including SQL

Chief Examiner

Associate Professor David Taniar

Campus Lecturer

Caulfield

David Taniar

Tutors

Caulfield

Winy (Geng Zhao)

Jason (Kefeng Xuan)

Sultan Alamri

Academic Overview

Outcomes

At the completion of this unit students will be able to:

- understand object-relational database design;
- understand multi-dimensional database design;
- understand query optimisation and its impact on programming;
- understand the database management systems recovery, concurrency, and transaction management mechanisms;
- understand database trends and current research directions in database management;
- use design a complex database system; and
- use a database programming language to access a relational database system.

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
Class test - Multidimensional, object-relational, and physical database design	10%	Class Test, Tuesday 24 April 2012
Assignment - Multidimensional, object-relational, and physical database design	30%	Week 11, Friday 18 May 2012
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
- Solutions to tutes, labs and assignments

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.

You will need to access: Oracle DBMS.

On campus students may use this software which is installed in the computing labs.

Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook.

Recommended Resources

Rob & Coronel, Database Systems, a chapter on Data Warehousing

Rahayu, Taniar & Pardede, Object-Oriented Oracle, the first three chapters

Elmasri & Navathe, Fundamentals of Database Systems, a chapter on Indexing

Unit Schedule

Week	Activities	Assessment
0		No formal assessment or activities are undertaken in week 0
1	Multidimensional Database Design: Introduction	
2	Multidimensional Database Design: Modelling	
3	Multidimensional Database Design: Modelling (Adv)	
4	Multidimensional Database Design: Queries	
5	Object-Relational Database Design: Transformation	
6	Object-Relational Database Design: Manipulations	
7	Object-Relational Database Design: DW Design	
8	Object-Relational Database Design: Advanced DW Design	Class Test, Tuesday 24 April 2012
9	Physical Database Design	
10	Physical Database Design	
11	Semi-structured Database Design and Storage	Assignment due, Friday 18 May 2012
12	Semi-structured Database Design and Storage	
	SWOT VAC	No formal assessment is undertaken 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>)

Assessment Tasks

Participation

- **Assessment task 1**

Title:

Class test - Multidimensional, object-relational, and physical database design

Description:

This is an individual class test. Case studies will be given as well.

Weighting:

10%

Criteria for assessment:

Students will be assessed on their understanding of multidimensional design, object-relational design, and physical database design.

Due date:

Class Test, Tuesday 24 April 2012

- **Assessment task 2**

Title:

Assignment - Multidimensional, object-relational, and physical database design

Description:

Students will develop a database design incorporating multidimensional design, temporal design using object-relational methods, and query optimization. A case study will be given as well.

Students doing FIT4048 will be given additional tasks in the assignment, covering an advanced topic, such as slowly changing dimensions (SCD), temporal attributes/dimensions, or advanced dimension modelling

Weighting:

30%

Criteria for assessment:

Students will be assessed on their understanding of multidimensional design, object-relational design, and physical database design.

Due date:

Week 11, Friday 18 May 2012

Examinations

Assessment Requirements

• Examination 1

Weighting:

60%

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

Other Information

Other

Reading List

Object-Oriented Oracle, Rahayu, Taniar, and Pardede, CyberTech, 2006

Database System Concepts, Silberschatz, Korth, and Sudarshan, 5th edition, McGraw Hill, 2006

Fundamentals of Database Systems, Elmasri, and Navathe, 5th edition, Addison Wesley, 2007

Database Systems: Design, Implementation and Management, Rob, and Coronel, 8th edition, Course Technology, 2007