MONASH University
Information Technology

**FIT1004
Data management**

Unit Guide

Semester 2, 2012

Last updated: 06 Jul 2012

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FIT1004 Data management - Semester 2, 2012

This unit will provide an introduction to the concepts of database design and usage and the related issues of data management. Students will develop skills in planning, designing, and implementing a data model using an enterprise-scale relational database system (Oracle). Methods and techniques will also be presented to populate, retrieve, update and implement integrity features on data in the implemented database system.

Manipulation of a database necessarily raises issues of data collection/creation and management, data rights (ownership, copyright, access, privacy etc) and data curation, which this unit will also address.

Mode of Delivery

- Berwick (Day)
- Clayton (Day)
- Gippsland (Day)
- Gippsland (Off-campus)
- Sunway (Day)
- South Africa (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:

- two hours of lectures,
- two hours of laboratory/tutorial (requiring advance preparation), and
- eight hours of self directed study - this will include reading and computer based activities.

Off-campus students generally do not attend lecture and tutorial sessions, however, you should plan to spend equivalent time working through the relevant resources and participating in discussion groups each week.

Unit Relationships

Prohibitions

BUS3112, CPE2005, CSE2132, CSE2138, CSE2316, CSE3180, CSE3316, FIT2010, GCO2815, IMS1907, IMS2112, MMS2801

Chief Examiner

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Campus Lecturer

Berwick

Lindsay Smith

Clayton

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South Africa

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Sunway

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Academic Overview

Outcomes

At the completion of this unit students will have:
A knowledge and understanding of:

- the major objectives of database technology;
- the relational model for databases and competing models;
- the phases of the database development life cycle and their correspondence to the phases of the system development lifecycle;
- the issues related to data creation and management, data rights and data curation;
- the techniques and tools to design and implement a database suitable for an information system;
- a database retrieval and manipulation language;
- methods to put in place physical structures to permit efficient operation of a database;
- the role of a database administrator.

Developed attitudes that enable them to:

- appreciate the privacy issues relating to storage of data in a database;
- practice ethical behaviour when developing, implementing and using a database.

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: Data Collection and Markup	5%	4PM Friday 10 August 2012
Assignment 2: Database Manipulation	20%	4PM Friday 14 September 2012
Assignment 3 Part A: Conceptual Design	Hurdle Requirement	4PM Friday 5 October 2012

Assignment 3 Part B: Full Database Design	20%	4PM Friday 19 October
Tutorial Participation and Quiz Completion	5%	Throughout the semester
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, where you are required to prepare for and participate in all activities in order for you to achieve a successful outcome in this unit.

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
- Quiz results
- 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

Student feedback from the semester 2 2011 offering indicated some difficulties with the management of groups for the group assignment tasks (assignments 2 and 3). For this offering we will be trialling individual assignments for assignments 2 and 3 in response to these comments. The tasks for the two assignments will be adjusted to take into consideration this change.

In addition for this offering the ordering of the two major sections of the unit have been adjusted to allow students longer to gain familiarity with SQL.

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.

If students wish to work on this unit *from home*, you will require a copy of SQL Developer and Power*Architect please see the links below in Recommended Resources. Both items of software are readily available and free of charge (it is suggested you obtain a copy from the Moodle unit web site).

TEXTBOOK

Rob, P., Morris, S. and Coronel, C., *Database Systems* 10th Edn., Cengage Learning, 2013

This text is available from the Monash University Book Shops. Availability from other suppliers cannot be assured. The Bookshop orders texts in specifically for this unit. You are advised to purchase your text book early.

The text is also available as an eBook from Cengage Learning. The URL to the eBook version on the Cengage site is: http://www.cengagebrain.com.au/. The Cengage (CourseSmart) book format is HTML5 and thus can be read on a range of devices, markup (notes and highlighting) and a number of other functions are possible. The eReader FAQ is available from:http://www.cengagebrain.com.au/shop/FAQ.html

Recommended Resources

This unit will make use of the Oracle 11G database running on the Monash ITS server zebra.its.monash.edu.au. All students will have an account on this server which will suffice for all database work this semester.

Although it is **not required**, if students wish to run a database server at home they can download Oracle XE (eXpress Edition) from the unit Moodle site or directly from the Oracle technet site:

- http://www.oracle.com/technology/software/products/database/xe/index.html

Please note:

1. for technet, registration (free) is required, and
2. this is a large download (around 200Mb) and **should not be attempted** without first consulting your campus lecturer.

The client software for accessing Oracle (SQLDeveloper) will be available in the labs. It will also be available via a download from the Moodle site for installation at home. SQLDeveloper is also available, after registration (free), from the technet site:

- http://www.oracle.com/technology/software/products/sql/index.html

For database Design we will be making use of the community edition of Power*Architect (version 1.06) developed by SQLPower:

- http://code.google.com/p/power-architect/

Power*Architect will also be available in the labs, for download from the Moodle site and can be downloaded directly from the link above.

Unit Schedule

Week	Activities	Assessment
0	Please check the Moodle 2 site: http://moodle.vle.monash.edu/	No formal assessment is undertaken in week 0
1	Introduction to Data Management	Assessment task 5: Tutorial participation and Quiz Completion will be due throughout the semester
2	Data Quality and Metadata	
3	Database Systems	Assignment 1 Due - Data Collection and Markup - 4PM Friday 10th August 2012
4	SQL	
5	Advanced SQL	
6	Advanced SQL Continued	
7	Transactions and Concurrency Management	
8	Conceptual Design	Assignment 2 Due - Database Manipulation - 4PM Friday 14th September 2012
9	Normalisation	
10	Logical and Physical Design	Assignment 3A Due - Conceptual Design - 4PM Friday 5th October 2012
11	Database Design Case Study	
12	Database Administration/Data Rights and Curation	Assignment 3B Due - Database Design - 4PM Friday 19th October 2012
	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 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: Data Collection and Markup
  Description:
  This task, which will be carried out partially during the lab time, will involve the collection
  of a set of data on a specified topic. The collected data will be required to be marked up
  using an appropriate document standard. This task is a individual assessment task - each
  student will collect and markup their own data.
  Weighting:
  5%
  Criteria for assessment:
  Task criteria:

  1. Correct data researched and collected, including acknowledgement of sources
  2. Appropriate markup used to record the data
  Due date:
  4PM Friday 10 August 2012

- **Assessment task 2**

  Title:
  Assignment 2: Database Manipulation
  Description:
  Students will be supplied with a database design via a schema file and asked to create
  the database under Oracle. The created database will be populated with appropriate
  student generated data and then used to develop a set of SQL queries and triggers.
  Weighting:
  20%
  Criteria for assessment:
  Task criteria:

  1. Student data must insert correctly and result in a consistent database state
  2. SQL queries must execute correctly and produce correct visible output
  3. Coded PL/SQL triggers must compile and meet the problem specifications
  4. Design modifications must execute correctly and meet the problem specifications
  Due date:
  4PM Friday 14 September 2012

- **Assessment task 3**

  Title:
  Assignment 3 Part A: Conceptual Design
  Description:
  Students will be supplied with a case study and asked to model this using Entity Relationship modelling. This part of assignment 3 will require the submission of a "beginning" conceptual design.
  Weighting:
  Hurdle Requirement
  Criteria for assessment:
  Student designs will not be graded. Tutors will discuss with each student individually during tutorials their submitted design, against the case study, as a first stage of the database design task. This task is a hurdle requirement, students who do not submit this task will not be able to submit assignment 3.
  Due date:
  4PM Friday 5 October 2012

- **Assessment task 4**

  Title:
  Assignment 3 Part B: Full Database Design
  Description:
  Based on the feedback from assignment 3A and the supplied case study, students will be required to complete the database design and produce a logical model. The final design will be tested by implementing the logical ERD in Oracle via a set of 'create table' statements.

  Please note that this assignment will *not be available* unless you have already submitted assignment 3A.
  Weighting:
  20%
  Criteria for assessment:
  Task Criteria:

  - Correct application of normalisation process with use of dependency diagrams at each normal form
  - Correct Logical ERD model created including - entities, PK's, attributes, relationships (connectivity and participation)
  - Generated Oracle schema file executes correctly against Oracle to produce valid database structure

  Due date:
  4PM Friday 19 October

- **Assessment task 5**

  Title:
  Tutorial Participation and Quiz Completion
  Description:
  Students will be assessed on participation in tutorial activities and on completion of five topic quizzes which will be made available via the VLE site during the semester.
  Weighting:
  5%
  Criteria for assessment:

Participation will be assessed in terms of contributions to group discussions and the level of engagement in tutorial activities.

Due date:
Throughout the semester

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

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.

Resubmission of assignments

At the Chief Examiners discretion, students may be permitted to resubmit assignments where *serious* medical issues or problems have impacted a students work.

Referencing requirements

Students are required to use the APA style of referencing for this unit - details are available from:

- http://www.lib.monash.edu.au/tutorials/citing/apa.html
- http://guides.lib.monash.edu/content.php?pid=88267&sid=656564
- Chapter 10 of the Faculty of Business and Economics Q Manual
  (http://www.buseco.monash.edu.au/publications/qmanual/qmanual.pdf)

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-pc
- 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 Commuity Services at 03 55146018 at Sunway

Other

Getting the most from your studies in this unit:

Lecture: During the lecture, your lecturer will introduce key theoretical concepts and demonstrate various approaches to data management tasks. The time in lectures is quite brief, please ensure you gain the best advantage from this time by:

- Prior to the lecture

    ♦ reading the study guide for the appropriate week, and
    ♦ downloading and reading the lecture slides,
- During the lecture

    ♦ annotate a set of lecture slides as the lecture proceeds, and
    ♦ **participate, question, seek clarification**
- After the lecture

    ♦ read over your notes and make sure you understand the concepts
    ♦ **seek help** if you are unsure

Laboratory/Tutorials: The labs consist of a set of graded exercises which allow you to put the theory presented in the lecture to work in creating, designing and using data and databases. The labs will also include issues that you will need to discuss with your fellow classmates and tutors. Before the lab you should carefully read through the lab activities. The teaching staff will presume that you have completed all the posted lab tasks each week and build subsequent activities on this assumption. For this reason it is very important that you complete all the posted tasks (**please note you will not be able to complete them in the allocated 2 hours, these will be completed in your self study 8 hours**). Given the cumulative nature of the learning, it is easy to fall behind if either you do not complete the required work or fail to understand key tasks/concepts. If you are having problems with lab exercises, please ensure you **speak to your tutor** and gain some assistance.

Off Campus students: Off campus students should pay particular attention to the Moodle OCL discussion forum for matters specifically related to them.