MONASH University
Information Technology

**FIT1004
Data management**

Unit Guide

October Intake, 2013

Last updated: 31 Oct 2013

Table of Contents

FIT1004 Data management - October Intake, 2013

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.

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload requirements

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 completing lab exercises, further reading, review, preparing assignments.

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

Pre-lecture reading is a wise thing for all students to do.

Unit Relationships

Prohibitions

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

Chief Examiner

Dr Maria Indrawan-Santiago

Campus Lecturer

Sunway

Ramesh Kumar

Consultation hours: To Be Announced at Malaysia Sunway campus

Sunway

Ramesh Kumar

Consultation hours: To Be Announced at Malaysia Sunway campus

Academic Overview

Learning 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.

Unit Schedule

Week	Activities	Assessment
0	Please check the Moodle 2 site: http://moodle.vle.monash.edu/	No formal assessment or activities are undertaken in week 0
1	Introduction to Data Management and Peer Instruction	Tutorial Participation and Quiz Completion will be due throughout the semester
2	Data Quality and Metadata	
3	Database Systems	
4	SQL	
5	Advanced SQL	
6	Advanced SQL (continued)	
7	Transactions and Concurrency Management	
8	Conceptual Design	Assignment 1: Database Manipulation due 4PM Friday, 20th December 2013
9	Normalisation	
10	Logical and Physical Design	Assignment 2 Part A: Conceptual Design due 4PM Friday, 10th January 2014
11	Database Design Case Study	
12	Database Administration/Data Rights and Curation	Assignment 2 Part B: Full Database Design due 4PM Friday, 24th January 2014
	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.

Assessment Summary

Examination (3 hours): 50%; In-semester assessment: 50%

Assessment Task	Value	Due Date
Assignment 1: Database Manipulation	25%	4PM Friday, Week 8
Assignment 2 Part A: Conceptual Design	Hurdle to the submission of Assignment 2B	4 PM Friday, week 10
Assignment 2 Part B: Full Database Design	20%	4PM Friday, Week 12
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 helps students to initially encounter information at lectures, discuss and explore the information during tutorials, and practice in a hands-on lab environment

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 the Demystifying Citing and Referencing tutorial at
http://lib.monash.edu/tutorials/citing/

Assessment Tasks

Participation

- **Assessment task 1**

    Title:
    Assignment 1: 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:
    25%
    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, Week 8

- **Assessment task 2**

    Title:
    Assignment 2 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 2 will require the submission of a
    "beginning" conceptual design.
    Weighting:
    Hurdle to the submission of Assignment 2B
    Criteria for assessment:
    Task Criteria:

    ♦ Correct application of SQL statements to create table according to a given
      database design.
    ♦ Correct application of SQL statements to populate the tables using some sample
      data.

    Due date:

4 PM Friday, week 10

- **Assessment task 3**

  Title:
  Assignment 2 Part B: Full Database Design
  Description:
  Based on the feedback from assignment 2A 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 2A.
  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, Week 12

- **Assessment task 4**

  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 Moodle 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

Learning resources

Monash Library Unit Reading List
http://readinglists.lib.monash.edu/index.html

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. 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 without comments
- Quiz results
- Solutions to tutes, labs and assignments

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.

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)

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

Please submit your work via the learning system for this unit, which you can access via links in the
my.monash portal.

Unless informed otherwise, students will submit their assignments in 2 places online (Moodle and
Damocles) and also in printed hard copy.

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 Edition, 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

Assessment Requirements

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.

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:

- Academic integrity;
  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
- Code of Practice for Teaching and Learning;
  http://www.policy.monash.edu.au/policy-bank/academic/education/conduct/suppdocs/code-of-practice-tea

Graduate Attributes Policy

http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.ht

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 Sunway 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 Sunway, 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.htmlTelephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Commuity Services at 03 55146018 at SunwayEmail: dlu@monash.eduDrop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Sunway Campus

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

Based on previous student feedback this unit is considered to be well structured and no changes have been made for this semester.

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

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

Other Information

♦ 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.