School of Computing and Information Systems

Unit Outline

KXO102 Information Modelling and Infrastructure

March - July 2010
Shanghai, China

Unit Coordinator
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UNIT OVERVIEW

Introduction
This first year unit in the Bachelor of Information Systems seeks to enable you to contribute to the development of information systems by introducing you to a practical and systematic approach to designing relational databases, starting from the conceptual information model, moving through to the relational database model and finally on to implementation using some relational database management software.

Prerequisites
KXO101 or BSA101

Unit Weight
12.5% of one academic year

Teaching Pattern
This unit is heavily web-dependent and pre-supposes an individually-paced 12-week study program, where each week contains a study guide, some virtual web-based lectures, textbook and other readings, and self-study exercises.

Weekly 2-hour face-to-face tutorials are provided as a learning rather than a teaching tool. They are provided mainly so you can ask questions about the study material, and seek guidance with exercises and assignments.

Unit Content
1. Database systems
2. Data models
3. The relational data model
4. Entity-relationship (ER) modelling
5. Normalisation and other modelling issues
6. Introduction to Structured Query Language (SQL)
7. Advanced SQL
8. Database design
9. Transaction management and concurrency control
10. Distributed databases and web databases
11. Information Resource Management and Data warehouses
12. Database administration

For more information see the section titled 'Content' on the unit website.
Prior Knowledge and/or Skills

An understanding of common business activities and the role of information systems as contained in the unit Business Information Systems (KX0101)

Learning Outcomes

On successful completion of this unit, you will be able to:

1. use conceptual information modelling techniques to undertake the analysis and design of the database component of an information system;
2. use the principles of information resource management, and the functions of a relational database management system, to contribute to the development and use of an information system;
3. create a database, and construct queries, reports and transactions using the high level features of a relational database management system;
4. demonstrate skills and understanding of the following professional issues:
   - Interpersonal communication and information gathering, especially for gathering, negotiating and confirming the requirements of an information model;
   - The production and maintenance of technical reports and system documentation;

Generic graduate attributes

The university has defined a set of generic graduate attributes expected in its graduates. [http://www.utas.edu.au/policy/attributes_grads.pdf](http://www.utas.edu.au/policy/attributes_grads.pdf) Your course is designed to enable you to develop generic skills that are valued in, and expected of, graduates. These are skills that you will need to develop over time. Hence you are encouraged to look for opportunities, as you study each unit, to reflect on and improve these skills.

- Understand the methodology for the design of conceptual information models;
- Understand the basic features and operations of a relational database system, including having a working knowledge of the relational query languages SQL;
- Be capable of applying this knowledge to the development of conceptual information models and their implementation as relational database systems.
- Be aware of the importance of adequate client consultation and negotiation when developing the requirements for an information model;
- Understand the nature and importance of documentation to support the justification, interpretation and maintenance of information models;
- Demonstrate a high level of report writing and oral communication;
- Discuss relevant problems with others, present their own opinions and critically assess the opinions of others. Conceptualise basic problems associated with the representation of the structure and modelling of information;
- Be capable of applying a well defined methodology to the design and development of a range of conceptual information models;
- Understand the importance of the production of correct database systems that have been rigorously tested and verified correct against its requirement specifications.
- Appreciate some of the issues of working with clients of different cultures in order to develop appropriate information models;
- Understand the key issues faced by information analysts and database designers from any culture in the development of highly functional systems.
- Acknowledge the social and ethical implications of their actions;
- Appreciate the impact of social change;
- Be committed to access and equity principles in their discipline or professional area, and society in general;
- Demonstrate responsibility to the local community, and society generally.

Alterations made to the unit as a result of student feedback

Major changes were made to the unit in 2008, and minor changes were made in 2009. In 2010 no significant changes are envisaged.

UNIT ASSESSMENT

Assessment Pattern

In-semester (30%), Exam (70%)

Assessment Summary

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual modelling assignment</td>
<td>10%</td>
<td>3 pm (Shanghai time) 8th April, 2010</td>
</tr>
<tr>
<td>Normalisation assignment</td>
<td>10%</td>
<td>3 pm (Shanghai time) 29th April, 2010</td>
</tr>
<tr>
<td>Database implementation assignment</td>
<td>10%</td>
<td>3 pm (Shanghai time) 20th May, 2010</td>
</tr>
<tr>
<td>Examination</td>
<td>70%</td>
<td>University Examination Period</td>
</tr>
</tbody>
</table>

Assessment Items

Item 1  Title: Conceptual modelling assignment
**Type:** In-Semester - individual assignment  
**Task Length:** 1500 words (indicative only)  
**Weighting:** 10%  
**Links to Learning Outcomes:** 1, 4  
**Due:** 3 pm (Shanghai time) 8th April, 2010  
**Description:** The first assignment involves gathering information from an interview with a business owner. From this interview the student must construct a conceptual information model, using the entity-relationship design methodology covered in lectures and tutorials. The output of this assignment is an entity-relationship model, together with support assumptions, justification and other relevant documentation.

**Item 2**  
**Title:** Normalisation assignment  
**Type:** In-Semester - individual assignment  
**Task Length:** 1500 words (indicative only)  
**Weighting:** 10%  
**Links to Learning Outcomes:** 1, 4  
**Due:** 3 pm (Shanghai time) 29th April, 2010  
**Description:** The second assignment involves using a conceptual information model, expressed using the entity-relationship diagrams covered in lectures and tutorials, and turning this into a set of relational database tables. The output of this assignment is a set of table descriptions, together with support assumptions, justification and other relevant documentation.

**Item 3**  
**Title:** Database implementation assignment  
**Type:** In-Semester - individual assignment  
**Task Length:** not applicable  
**Weighting:** 10%  
**Links to Learning Outcomes:** 1, 3, 4  
**Due:** 3 pm (Shanghai time) 20th May, 2010  
**Description:** Given all (or part of) the conceptual information model and relational database tables developed in assignment 1 and 2, implement the model using Microsoft Access 2000. This involves a degree of design and implementation to demonstrate that the student can capably use the features offered in Microsoft Access 2000.

**Item 4**  
**Title:** Examination  
**Type:** Formal Examination  
**Task Length:** 2 hours  
**Weighting:** 70%  
**Links to Learning Outcomes:** 1, 2, 3, & 4  
**Due:** University Examination Period  
**Description:** This examination is aligned with the achievement of all the unit's learning outcomes. A model examination paper will be provided via MyLO.

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See the 'Assessment' section in unit website for more detailed information about assessment items.

**How your Final Grade will be determined**

Overall assessment will be based on the student's performance throughout the semester as well as in a formal examination. In order to achieve a pass (or better) result, a student must obtain:

1. at least 45% of the total mark for in-semester assessment items  
2. at least 45% of the mark for the formal examination  
3. at least 50% of the overall mark

**UNIT RESOURCES**

**Unit Web Site**

This unit is Web Dependent: content & communication. This means that you will need to use the Web for this unit. The unit website contains unit information and resources. The unit website is accessed from http://www.utas.edu.au/coursesonline/. You will need to use your University of Tasmania email pop account username and password to log on to the MyLO system. Once authenticated by the system your personalised MyLO Learning Online area will be displayed. It contains links to the websites that you have permission to access - including the website for this unit.

If you are not able to access the unit website, please contact the technical staff at SOU.

**Prescribed Text**


**Readings**

Links to relevant web-based readings will be provided in each weekly study guide

**Software**
The software that you will need to access the unit website and to study this unit, including general purpose software such as word processors, is provided on the computers in the computing labs. If you intend to use software on other computers please check that the versions are compatible. Students are expected to have access to Microsoft Access 2000, Microsoft Word 2000, Microsoft Visio 2000 and Microsoft Powerpoint 2000 (or later versions).

GENERAL RESOURCES

School Website

School of Computing and Information Systems - Faculty of Science, Engineering, and Technology.
http://www.cis.utas.edu.au

Faculty Website

Information and Resources for Faculty of Science, Engineering and Technology students are available on the faculty website at: http://www.utas.edu.au/scieng

University Website

Information and Resources for 'Current Students' are available on the university website at:
http://www.utas.edu.au/students/

GENERAL ASSESSMENT

Approach to Learning

The University is committed to high standards of professional conduct in all activities, and holds its commitment and responsibilities to its students as being of paramount importance. Likewise, it holds expectations about the responsibilities students have as they pursue their studies within the special environment the University offers.

The University's Code of Conduct for Teaching and Learning states:

Students are expected to participate actively and positively in the teaching/learning environment. They must attend classes when and as required, strive to maintain steady progress within the subject or unit framework, comply with workload expectations, and submit required work on time.

You are expected to spend about 130 hrs studying in this unit - this includes attendance at scheduled teaching sessions. (For a 13 week semester this is, on average, 10 hr/wk.) This is the amount of study time that the ‘typical’ student will need to reach the level of competence and understanding required to fulfil the unit objectives. You are expected to:

- attend all scheduled teaching sessions, unless otherwise notified by the unit coordinator
- prepare for, and actively participate in all scheduled teaching sessions
- complete the assigned learning tasks
- review what has been learnt
- complete assessment items and submit them on time
- access and be familiar with the information and resources available on the unit website
- seek help from teaching staff if you have any questions or difficulties in studying this unit

You are encouraged to read the university’s Code of Conduct for Teaching and Learning. Part A describes the ‘Responsibility of the University to Students’ and part B describes the ‘Responsibilities of Students to the University’.

It is expected that students will familiarise themselves with access and use of the MyLO system operated by the University for the electronic delivery of course materials, and for various forms of communication.

It is expected that students will consult email sent to their University email address at least twice a week for notices relating to the administration of the unit, and for notification of the results of assignments.

It is expected that students will read the background material specified in the course curriculum, will actively attend and participate in tutorials, and be prepared to discuss relevant issues arising with tutors, lecturers and fellow students.

Student Expectations of the Unit

Students enrolled in this Unit may reasonably expect the following:

1. To be able to contact a lecturer or tutor by electronic mail, to raise issues arising in the unit, either relating to content or student performance within the unit.
2. Subject to availability, to be able to discuss such issues in person with the lecturer or tutor.
3. That assignments will be marked and the marks will normally be returned within 3 weeks of due dates.
4. That all relevant notices regarding the administration of the unit, including any necessary changes, will be communicated to all students enrolled in the unit via email.
These expectations are in addition to those specified in relevant University regulations.

Plagiarism

Unless specifically stated in the specification of the assessment item provided on the unit website, it is required that:

- work submitted by a student is the work of that student alone OR
- where the assessment item is to be completed by a group of students, the work submitted by the group of students is the work of that group of students alone.

While students are encouraged to discuss the assignments in this unit and to engage in active learning from each other, it is important that they are also aware of the University’s policy on plagiarism. Plagiarism is taking and using someone else’s thoughts, writings or inventions and representing them as your own; for example downloading an essay wholly or in part from the internet, copying another student’s work or using an author’s words or ideas without citing the source.

"Plagiarism is a form of cheating. It is taking and using someone else's thoughts, writings or inventions and representing them as your own; for example, using an author's words without putting them in quotation marks and citing the source, using an author's ideas without proper acknowledgment and citation, copying another student's work.

If you have any doubts about how to refer to the work of others in your assignments, please consult your lecturer or tutor for relevant referencing guidelines, and the academic integrity resources on the web at http://www.academicintegrity.utas.edu.au.

The intentional copying of someone else's work as one's own is a serious offence punishable by penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, to exclusion from a unit, a course or the University. Details of penalties that can be imposed are available in the Ordinance of Student Discipline – Part 3 Academic Misconduct, see http://www.utas.edu.au/universitycouncil/legislation/.

The University and any persons authorised by the University may submit your assessable works to a plagiarism checking service, to obtain a report on possible instances of plagiarism. Assessable works may also be included in a reference database. It is a condition of this arrangement that the original author's permission is required before a work within the database can be viewed."

It is important that you understand this statement on plagiarism. Should you require clarification please see your unit coordinator or lecturer. Useful resources on academic integrity, including what it is and how to maintain it, are also available at: http://www.academicintegrity.utas.edu.au

Referencing

The preferred text referencing systems for the School is the Harvard system (also referred to as the author-date system). In your written work you will need to support your ideas by referring to scholarly literature, works of art and/or inventions. For information on presentation of assignments, including referencing styles: http://utas.libguides.com/referencing

It is important that you understand how to correctly refer to the work of others and maintain academic integrity. Failure to appropriately acknowledge the ideas of others constitutes academic dishonesty (plagiarism), a matter considered by the University of Tasmania as a serious offence. The university document on plagiarism contains information about referencing the work or ideas of others (see http://www.utas.edu.au/plagiarism/).

Submissions

The details of the submission method (paper, electronic or other) for each assignment will be supplied in a separate assignment specification sheet. All in-semester assignment submissions (including electronic submissions) are to include an Assignment Cover Sheet which includes a statement confirming that the submission is your own work. If this undertaking is not signed, the assignment will not be marked. The Assignment Cover Sheet is available on the School’s web site http://www.cis.utas.edu.au/cisview/resources.jsp.

Extensions

Assessment items will not be accepted after the due date except under the conditions stated in the School policy on late assessment. http://www.cis.utas.edu.au/downloads/ExtensionPolicy.pdf (PDF - 100KB).

Review of Assessment and Appeals

1. It is expected that students will adhere to the following policy for review of any piece of continuous assessment.
   a. Within 5 days of the release of the assessment result, the student should request an appointment with the Lecturer. The student should be prepared to discuss specifically which section of the marking criteria they are disputing and why they consider the mark is inappropriate.
   b. Following this discussion, students may request a formal remark of the original submission (in accordance with Rule of Academic Assessment 111, clause 22.1). This remark will be undertaken, where practicable, by an alternative assessor.
2. Students may also request a review of the final result in a unit. The request and payment must be made within 10 days from the date of the result notification. Students are referred to Rule of Academic Assessment 111, clause 23 at http://www.utas.edu.au/universitycouncil/legislation/rule111.pdf and http://www.admin.utas.edu.au/ac_serv/flowchart_review_assesment.pdf.

Complaints Procedure

It is expected that students will adhere to the following policy for making any complaint or grievance directly related to a Unit:

a. In the first instance, students are to approach the Lecturer or Unit Coordinator concerned and arrange a time to speak with them about their concern.

b. If an issue remains unresolved, the student should approach the Head of School and arrange a time to speak with them about their concern.

If the School's internal policy of complaints is unable to resolve an issue, students should consult Ordinance 8 Student Complaints for further direction, see http://acserv.admin.utas.edu.au/complaints_info.html

Formal Examination

The formal examination will be held at SOU, Shanghai, and is conducted by the University Registrar.

Final Grade

Passing grades will be awarded based on the AVCC guidelines:

- PP at least 50% of the overall mark but less than 60%
- CR at least 60% of the overall mark but less than 70%
- DN at least 70% of the overall mark but less than 80%
- HD at least 80% of the overall mark

In order to comply with the benchmarks set by the Faculty of Science, Engineering & Technology for distribution of grades in units, both the in-semester and examination marks that students obtain may be adjusted either upwards or downwards. See http://fcms.its.utas.edu.au/scieng/scieng/policies.asp for details of the Faculty Assessment Guidelines.