FIT5168 Object and semi-structured database - Semester 1, 2011

Management of semi-structured data. The unit looks at the limitation of current relational based DBMS in handling XML. Explore the concept of modelling XML using XML Schema and retrieving it using XSLT. Design issues in creating native XML database. Exploring the approaches taken by current relational DBMS in storing and retrieving XML-based data.

Mode of Delivery

Caulfield (Day)

Contact Hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Workload

Workload commitments for this unit:

- two-hour lecture
- two-hour tutorial
- a minimum 6-8 hours of personal study including meeting time to complete group assignments.

Unit Relationships

Prerequisites

Recommended knowledge: Knowledge of relational database.

Chief Examiner

Mark Carman

Campus Lecturer

Caulfield

Mark Carman

Contact hours: Monday 10-12 or email to make an appointment

Learning Objectives

At the completion of this unit students will:

- have the knowledge of managing data that may not be appropriately modelled and implemented as relational model;
• be able to design data repository for XML documents;
• be able to apply appropriate technology to manage XML data;
• be able to use current DBMS to store and retrieve non-relational data such as XML and multimedia;
• appreciate the strength and weaknesses of several approaches such as object relational, native XML and object oriented DBMS in handling the XML and multimedia 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: 50%; In-semester assessment: 50%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designing XML database.</td>
<td>30%</td>
<td>Monday 18 April 2011</td>
</tr>
<tr>
<td>Designing data storage and retrieving XML from a Relational DB</td>
<td>20%</td>
<td>Monday 23 May 2011</td>
</tr>
<tr>
<td>Examination 1</td>
<td>50%</td>
<td>To be advised</td>
</tr>
</tbody>
</table>

Teaching Approach

• Lecture and tutorials or problem classes
   The teaching of this unit will consist of lectures, tutorials, self-study and group work. The main concepts of the unit will be delivered during lectures. Practical exercises on the concepts will be carried out during tutorials. It is expected that students will attempt the tutorial exercises prior to attending the tutorial classes. The tutorial classes will be used to discuss problems encountered while completing the exercises or to discuss important issues that students may need to be aware of in completing the exercises.

   Although tutorials are not compulsory, it is the student's responsibility to attend and participate in tutorial discussion as tutorials are the preferred venue for clarification and queries on the topics. Unless students have good reasons to miss tutorial classes, no consultation outside tutorial classes will be provided in regards to the tutorial exercises and discussion.
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

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.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

Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date*</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21/02/11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28/02/11</td>
<td>Introducing semi-structured data (XML)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>07/03/11</td>
<td>The XML Data Model</td>
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<tr>
<td>3</td>
<td>14/03/11</td>
<td>Defining XML datatypes (XML Schema)</td>
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<tr>
<td>4</td>
<td>21/03/11</td>
<td>Advanced XML Schema</td>
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<tr>
<td>5</td>
<td>28/03/11</td>
<td>XML Namespaces, Document Engineering</td>
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<tr>
<td>6</td>
<td>04/04/11</td>
<td>Path Expressions (XPath), Transforming XML (XSLT)</td>
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<tr>
<td>7</td>
<td>11/04/11</td>
<td>Advanced XSLT</td>
<td></td>
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<tr>
<td>8</td>
<td>18/04/11</td>
<td>Storing XML in a DB</td>
<td>Assignment 1 due Monday 18 April 2011</td>
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<tr>
<td></td>
<td></td>
<td>Mid semester break</td>
<td></td>
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<tr>
<td>9</td>
<td>02/05/11</td>
<td>Querying XML (XQuery)</td>
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<tr>
<td>10</td>
<td>09/05/11</td>
<td>Parsing XML</td>
<td></td>
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<tr>
<td>11</td>
<td>16/05/11</td>
<td>Web Service standards</td>
<td></td>
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<tr>
<td>12</td>
<td>23/05/11</td>
<td>Guest lecture and revision</td>
<td>Assignment 2 due Monday 23 May 2011</td>
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*Please note that these dates may only apply to Australian campuses of Monash University. Off-shore students need to check the dates with their unit leader.

**Assessment Policy**

To pass a unit which includes an examination as part of the assessment a student must obtain:

- 40% or more in the unit’s examination, and
- 40% or more in the unit’s total non-examination assessment, and
- an overall unit mark of 50% or more.

If a student does not achieve 40% or more in the unit examination or the unit non-examination total assessment, and the total mark for the unit is greater than 50% then a mark of no greater than 49-N will be recorded for the unit.

**Assessment Tasks**

**Participation**

- **Assessment task 1**
  
  **Title:** Designing XML database.
  
  **Description:** This assessment aims to evaluate students' ability to design an XML repository, consisting of XML documents and their associated XML schemas.
  
  **Weighting:** 30%
  
  **Criteria for assessment:**
  
  Explanation of the design process that the student followed in producing the repository and the reasoning behind any design decisions made.

  The correctness and robustness of the design (XML Schema) produced.

  The correctness of the XML document instances according to the schema.

  **Due date:**
  
  Monday 18 April 2011

  **Remarks:**
  
  This is a group assignment. The group will consist of 2 students.

- **Assessment task 2**
  
  **Title:** Designing data storage and retrieving XML from a Relational DB
  
  **Description:** This assessment aims to evaluate students' ability to use transformation and/or query languages to access and manipulate data from an XML repository. The assessment will include the design of several queries/transformations to demonstrate the students' ability to use XSLT and/or XQuery.
Weighting:
20%

Criteria for assessment:
The creation of declarative scripts that enable the appropriate data to be retrieved in the correct format from an XML repository.

The correct use of XSLT and/or XQuery constructs.

Due date:
Monday 23 May 2011

Remarks:
Students will be interviewed during week 12 tutorial as part of the marking criteria of this assessment. This is a group assignment. A group consists of 2 students.

Examinations

• Examination 1

Weighting:
50%

Length:
2 hours

Type (open/closed book):
Closed book

Electronic devices allowed in the exam:
None

Remarks:
Quick reference guide on XML Schema and XSLT will be provided as part of the exam booklet.

Assignment submission

Assignment coversheets are available via "Student Forms" on the Faculty website:
http://www.infotech.monash.edu.au/resources/student/forms/
You MUST submit a completed coversheet with all assignments, ensuring that the plagiarism declaration section is signed.

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:

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later
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:

Key educational policies include:

- Plagiarism
  (http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html)
- Assessment
- Special Consideration
  (http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html)
- 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.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 www.monash.edu.au/students. 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. 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://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

The recommended readings of this unit will be provided weekly through MUSO