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**FIT5043 Distributed database - Semester 2, 2010**

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FIT5043 Distributed database - Semester 2, 2010

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Unit synopsis

This unit focuses on designing, developing and deploying distributed database systems. The unit introduces various contemporary issues including data model partitioning, fragmentation, replication issues, query optimisation, concurrency control, restart and recovery, distributed database design, client-server and distributed database applications. Particular attention will be paid to detailed consideration of distributed database management issues.

Learning outcomes

At the completion of this unit students will:

- be familiar with the currently available models, technologies for and approaches to building distributed database systems;
- have developed practical skills in the use of these models and approaches, so that they will be able to select and apply the appropriate tools for a particular case;
- be aware of the current research directions in the field and their possible outcomes;
- be able to carry out research on a relevant topic, identify primary references, analyse them and come up with meaningful conclusions;
- be able to apply learned skills to solving practical database related tasks.

Contact hours

2 hrs lectures/wk, 2 hrs laboratories/wk

Unit relationships

Prohibitions

CSE5200
Teaching and learning method

Teaching approach

Timetable information

For information on timetabling for on-campus classes please refer to MUTTS, http://mutts.monash.edu.au/MUTTS/

Tutorial allocation

On-campus students should register for tutorials/laboratories using the Allocate+ system: http://allocate.its.monash.edu.au/

Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date*</th>
<th>Topic</th>
<th>Study guide</th>
<th>References/Readings</th>
<th>Key dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19/07/10</td>
<td>Distributed Computing and Database Systems: An Introduction</td>
<td>1</td>
<td></td>
<td>No lab in week 1</td>
</tr>
<tr>
<td>2</td>
<td>26/07/10</td>
<td>Distributed Database Design I: Design Strategies and Horizontal Fragmentation</td>
<td>2</td>
<td>Ozsu, Valduriez, Ch.5</td>
<td>Lab exe 1 Due</td>
</tr>
<tr>
<td>3</td>
<td>02/08/10</td>
<td>Distributed Database Design II: Vertical Fragmentation and Allocation</td>
<td>3</td>
<td>Ozsu, Valduriez, Ch.5</td>
<td>Lab exe 2 Due</td>
</tr>
<tr>
<td>4</td>
<td>09/08/10</td>
<td>Semantic Data Control</td>
<td>4</td>
<td>Ozsu, Valduriez, Ch.6</td>
<td>Lab exe 3 Due</td>
</tr>
<tr>
<td>5</td>
<td>16/08/10</td>
<td>Distributed Query Processing I</td>
<td>5</td>
<td>Ozsu, Valduriez, Ch. 7</td>
<td>Lab exe 4 Due</td>
</tr>
<tr>
<td>6</td>
<td>23/08/10</td>
<td>Distributed Query Processing II</td>
<td>6</td>
<td>Ozsu, Valduriez, Ch. 8</td>
<td>Lab exe 5 Due</td>
</tr>
<tr>
<td>7</td>
<td>30/08/10</td>
<td>Query Optimization I</td>
<td>7</td>
<td>Ozsu, Valduriez, Ch. 9</td>
<td>Research Paper Assignment Due</td>
</tr>
<tr>
<td>8</td>
<td>06/09/10</td>
<td>Query Optimization II</td>
<td>8</td>
<td>Ozsu, Valduriez, Ch. 9</td>
<td>Research Paper Presentations</td>
</tr>
<tr>
<td>9</td>
<td>13/09/10</td>
<td>Distributed Transaction Management</td>
<td>9</td>
<td>Ozsu, Valduriez, Ch. 10</td>
<td>Research Paper Presentations</td>
</tr>
<tr>
<td>10</td>
<td>20/09/10</td>
<td>Distributed Concurrency Control I</td>
<td>10</td>
<td>Ozsu, Valduriez, Ch. 11</td>
<td>Research Paper Presentations</td>
</tr>
</tbody>
</table>

Mid semester break
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Chapter/Section</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>04/10/10</td>
<td>Distributed Concurrency Control II</td>
<td>11</td>
<td>Oszu, Valduriez, Ch. 11 Practical Assignment Due</td>
</tr>
<tr>
<td>12</td>
<td>11/10/10</td>
<td>Reliability and Fault Tolerance in Distributed Databases</td>
<td>12</td>
<td>Oszu, Valduriez, Ch. 12 Demos</td>
</tr>
<tr>
<td>13</td>
<td>18/10/10</td>
<td>Parallel Databases</td>
<td>13</td>
<td>Taniar et al., Ch.1 Demos</td>
</tr>
</tbody>
</table>

*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.*
Unit Resources

Prescribed text(s) and readings


Text books are 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.

Recommended text(s) and readings


Equipment and consumables required or provided

Students studying off-campus are required to have the minimum system configuration specified by the Faculty as a condition of accepting admission, and regular Internet access. On-campus students, and those studying at supported study locations may use the facilities available in the computing labs. Information about computer use for students is available from the ITS Student Resource Guide in the Monash University Handbook. You will need to allocate time each week for use of a computer, including time for newsgroups/discussion groups.

Study resources

Study resources we will provide for your study are:
Assessment

Overview

Assignments/Tutorial exercises and attendance: 90%; Presentation: 10%

Faculty 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.

Assignment tasks

Assignment coversheets

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.

Assignment submission and return procedures, and assessment criteria will be specified with each assignment.

Assignment submission and preparation requirements will be detailed in each assignment specification. 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.

- Assignment task 1

  Title: Lab Exercises and Attendance
  Description: Weekly exercises in the lab which will focus on practical aspect of learning of distributed databases concepts. The total number of exercises to be completed is 5. The exercises will be performed using Distributed Oracle and JDeveloper. This task will also consider students' attendance.
  Weighting: 10%
  Criteria for assessment: 
  Due date: Each week in the lab (week2-6)
• **Assignment task 2**

  **Title:**
  Research Paper Assignment 1

  **Description:**
  Research Paper that requires investigating and analysing a related area in Distributed Databases.

  **Weighting:**
  40%

  **Criteria for assessment:**

  **Due date:**
  Week 7, 3/9/2010, Friday by 5pm

• **Assignment task 3**

  **Title:**
  Presentation

  **Description:**
  Presentation of the research paper

  **Weighting:**
  10%

  **Criteria for assessment:**

  **Due date:**
  weeks 8-10

• **Assignment task 4**

  **Title:**
  Practical Assignment 2

  **Description:**
  Practical assignment to be implemented in Oracle and JDeveloper and assessing students' understanding of the DDBS and also the concepts covered in the labs

  **Weighting:**
  40%

  **Criteria for assessment:**

  **Due date:**
  Week 11, 8/10/2010, Friday by 5pm

**Due dates and extensions**

Please make every effort to submit work by the due dates. It is your responsibility to structure your study program around assignment deadlines, family, work and other commitments. Factors such as normal work pressures, vacations, etc. are not regarded as appropriate reasons for granting extensions. Students are advised to NOT assume that granting of an extension is a matter of course.

Students requesting an extension for any assessment during semester (eg. Assignments, tests or presentations) are required to submit a Special Consideration application form (in-semester exam/assessment task), along with original copies of supporting documentation, directly to their lecturer within two working days before the assessment submission deadline. Lecturers will provide specific outcomes directly to students via email within 2 working days. The lecturer reserves the right to refuse late applications.

A copy of the email or other written communication of an extension must be attached to the assignment submission.
Refer to the Faculty Special consideration webpage or further details and to access application forms: http://www.infotech.monash.edu.au/resources/student/equity/special-consideration.html

**Late assignment**

Assignments received after the due date will be subject to a penalty of 10% deduction per day for late submission.

**Return dates**

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

Please visit the following URL: http://www.infotech.monash.edu.au/units/appendix.html for further information about:

- Continuous improvement
- Unit evaluations
- Communication, participation and feedback
- Library access
- Monash University Studies Online (MUSO)
- Plagiarism, cheating and collusion
- Register of counselling about plagiarism
- Non-discriminatory language
- Students with disability
- End of semester special consideration / deferred exams