Overview

CSE4DBF Term 3

Database Fundamentals

27/04/2023

Reading: subject learning guide – available from LMS

Introduction

1. Lecturer
2. About This Subject
3. Lectures and Labs
4. Resources
5. Assessment
6. Topics Covered
7. Outline

Lecturer

Lianhua (Lina) Chi, PhD

Subject Coordinator/Lecturer

Department of CS & IT

My office and contact info:

- Office: PS2 – 205
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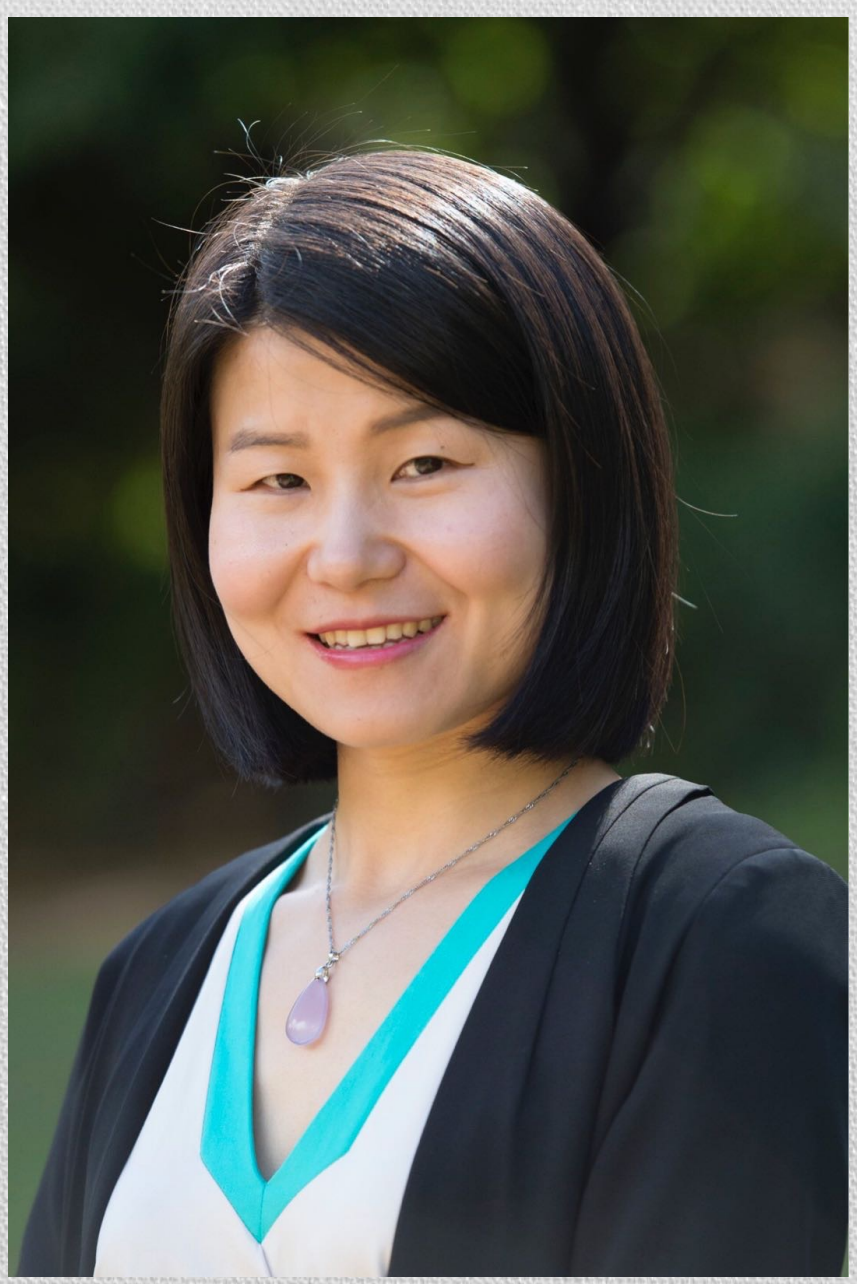

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1. Lecturer
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3. Lectures and Labs
4. Resources
5. Assessment
6. Topics Covered
7. Outline

About this subject

- **Contents:** we are going to learn about relational databases using Oracle.
- **Oracle**: Students enrolled in this subject can register the Oracle Academy Member hub and set up corresponding learning path for Oracle Database Certification. (Your accounts have been created and released today.)
- **Lecture Recaps**: All lecture recaps will be recorded and uploaded to our LMS.
- **Consultations**: I will offer an online consultation each week (every Monday 6pm- 8pm). The details of the consultation can be found on LMS. In addition to that, email me or book an appointment with me if you have any questions or need any help.
- **Labs**: Lab recordings will be also uploaded to LMS.

Subject Intended Learning Outcomes (SILOs)

Upon successful completion of this subject, you should be able to:

- **Design** a relational database using an ER or EER diagram and use a transformation process to map the ER or EER diagram to a relational database design.
- **Evaluate** database design in terms of data anomalies and redundancies by applying the appropriate normalization techniques.
- **Implement** database systems using SQL and advanced PL/SQL including stored procedures and triggers.
- **Explain** the underlying model of relational database operations using relational algebra.
- **Evaluate** the possible risks and ethical and social considerations relevant to designed systems.

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3. Lectures and Labs
4. Resources
5. Assessment
6. Topics Covered
7. Outline

Lectures

Our individual preferences vary when it comes to learning in an online environment.

Keeping that in mind, we have designed the lecture contents in the form of ‘LMS Books’, which are self-contained and organized to be suitable for self-learning. In addition to the reading books, we will also provide topic explanation recordings, where we will go through the concepts of the week and try to explain everything as thoroughly as possible.

The lecture recordings for a week will be available in LMS.

Lab Classes

- No lab classes in Week 1
- Lab materials will be available through LMS
- Accounts required for labs:
  - LTU User Account
  - ORACLE Account (will be issued for Lab Class 5)

Live sessions timetable and links

Week	Date	Session content
Week 1	Lecture recap: Thursday 27 April 2023, 6–8pm Student consultation: Monday 24 April 2023, 6–8pm	Introduction to databases (**No lab in Week 1**)
Week 2	Lecture recap: Tuesday 2 May 2023, 6–8pm Lab session: Wednesday 3 May 2023, 7–9pm Student consultation: Monday 1 May 2023, 6–8pm	ER/EER modelling and transformation
Week 3	Lecture recap: Tuesday 9 May 2023, 6–8pm Lab session: Wednesday 10 May 2023, 7–9pm Student consultation: Monday 8 May 2023, 6–8pm	Normalisation and data manipulation using relational algebra
Week 4	Lecture recap: Tuesday 16 May 2023, 6–8pm Lab session: Wednesday 17 May 2023, 7–9pm Student consultation: Monday 15 May 2023, 6–8pm	Structured Query Language (SQL)
Week 5	Lecture recap: Tuesday 23 May 2023, 6–8pm Lab session: Wednesday 24 May 2023, 7–9pm Student consultation: Monday 22 May 2023, 6–8pm	SQL practice week
Week 6	Lecture recap: Tuesday 30 May 2023, 6–8pm Lab session: Wednesday 31 May 2023, 7–9pm Student consultation: Monday 29 May 2023, 6–8pm	PL/SQL

Lab Tutor

Qasim Abbas

Tutor

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Qasim is currently pursuing his Ph.D. degree with the Department of Computer Science and Information Technology, La Trobe University, Melbourne, Australia. His current research includes neurological image analysis and cryptographic image hashing.

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1. Lecturer
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5. Assessment
6. Topics Covered
7. Outline

Resources

Subject Website:

- URL: **https://lms.latrobe.edu.au/course/view.php?id=133842**
- You use your student online username and password to log in to the Learning Management System (LMS)

Lecture Online Book:

- Available on the above URL

Textbook:

- Elmasri, R. and Navathe, S. 2016. *Fundamentals of Database Systems – Seventh Edition*, Pearson.
- Carlos Coronel & Steven Morris. Database Systems: Design, Implementation, & Management, Cengage Learning

Website: Oracle Academy Member Hub - https://academy.oracle.com/

Introduction

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3. Lectures and Labs
4. Resources
5. Assessment
6. Topics Covered
7. Outline

Assessments

Assessments	Description	Weighting	Week/date/time
Assessment 1: EER design	Assignment 1, one database conceptual design assignment. Given problem description, students provide EER Diagram as the database conceptual design.	10%	Due Sunday, **14 May 2023 by 23.59** (Melbourne time)
Assessment 2: EER transformation	Assignment 2, one database table design assignment. Given a complete EER diagram, students provide table design and implement the tables in DBMS	10%	Due Sunday, **28 May 2023 by 23.59** (Melbourne time)
Assessment 3: SQL and PL/SQL implementation	Assignment 2, one database programming assignment. Given a populated database, students write SQL queries, stored procedures and triggers.	20%	Due Sunday, **4 June 2023 by 23.59** (Melbourne time)
Assessment 4: Exam	One 3-hour examination Online mode (LMS)	60%	Centrally scheduled

How to pass this subject

- **Set goals** (daily or weekly learning goals)
- **Manage your learning environment** (try to keep out distractions)
- **Manage your time** (try to allocate about more than 10 hours per week per subject)
- **Read LMS books lectures or watch lecture prerecording**
- **Complete lab classes**
- **Self-review tests**
- **Ask questions**

How to pass this subject

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4. Resources
5. Assessment
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Topics Covered

- Introduction to Database Systems
- Relational Model
- Entity-Relationship Modelling
- Extended Entity-Relationship Modelling
- Normalization
- Relational Algebra
- SQL (Query Language)
- Stored Procedures/Functions and Triggers

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Subject Contributor

Syed Mahbub

Subject Contributor

After completing his bachelor's degree in Computer Science and Engineering from Bangladesh University of Engineering and Technology, Syed worked in the industry as a software engineer for about 3 years. Syed completed his master's degree in Information technology in 2016 from La Trobe and is currently finalizing his PhD thesis on feature engineering. Syed has been serving the department of CS&IT as an associate lecturer for the past 3 years. His research interest includes natural language processing, social network analysis, and feature engineering.

END

Overview

Any questions?