Dr Greg Wadley

INFO 90002
Database Systems & Information Modelling

Week 01

Introduction to Subject

Introduction to Relational Databases

Introduction to MySQL

Structure of today's lectures

- first hour: Introductions and admin
  - subject overview
  - staff and students
  - learning resources
  - assessment
- second hour: Introduction to databases
  - database technology, past present and future
  - how databases are designed, implemented and used
- third hour: Introduction to the *MySQL* RDBMS
  - client and server software
  - how to download and install
  - how to use in labs and at home

Welcome!

- Welcome to INFO 90002
  Database Systems & Information Modelling

  Why this subject matters
  - database = key building block in many technology careers
  - database = one of the most widely-used technologies
    - embedded within most of the interesting ICT of today
      - social media, apps, websites, banking, scientific research ...
  - database have come to influence our culture
    - “The database is the major cultural form of the 21st century in much the same way as the novel was for the 19th and the film for the 20th. … While retaining the visual and temporal aspects of film, the modality of hypertext or of computer games eschews its linear modality for the modality of the database, in which objects are linked together but their assembly into a narrative experience is in the hands of the audience."
      Dourish and Mazmanian (2011), discussing Manovich (2002) *The Language of New Media*

What are employers looking for?

Forbes (IT)	Forbes (NACE)	AIIA	Youth Central (Generic)	Dept of Employment
SQL	Teamwork	Cross-Cultural Competency	Communication	(ICT Sector) Lack of;
Mentoring	Solve Problems	Social Intelligence	Problem Solving	Industry Knowledge
ORACLE	Make Decisions	Novel & Adaptive Thinking	Teamwork	Technical Skills
Collaboration	Communicate	Virtual Collab.	Learning	Other Soft Skills
Process Improvement	Plan, Organise, Prioritise	New Media Literacy	Initiative and Enterprise	Communication Skills
Business Devt.	Obtain and Process Info	Computational Thinking	Self-management	
Decision Making	Quantitative Data Analysis	Design Mindset	Planning and Organising	
Data Analysis	Technical Skills	Resilience	Technical Skills	
SAP	Influencing	Transdisciplinarity		

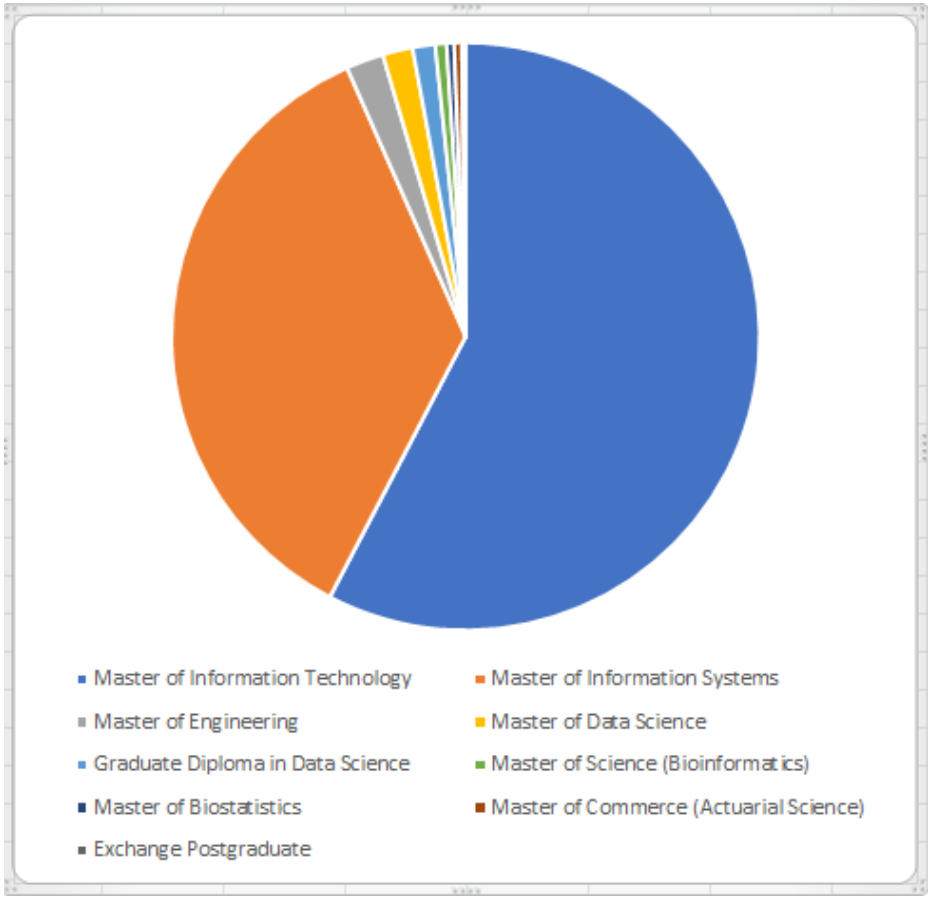
About the teaching staff

- Subject coordinators
  - Greg Wadley (lectures) and David Eccles (labs)
- Lab demonstrators
  - (tbd)
- Student representative
  - (you? we are seeking a volunteer)
- Interacting with staff
  - in class
  - office hours (choose a time today) room 9.08 DMcD building
  - LMS discussion forum
  - email for *personal* requests only

About you

- Your degree

Master of Information Technology	279
Master of Information Systems	173
Master of Engineering	10
Master of Data Science	8
Graduate Diploma in Data Science	6
Master of Science (Bioinformatics)	3
Master of Biostatistics	2
Master of Commerce (Actuarial Science)	2
Exchange Postgraduate	1



- Range of backgrounds
  - existing IT knowledge
  - academic and work history
  - career directions
  - local and international

About the subject

- Prerequisites, not-allowed subjects, credit for experience
  - Have you studied DB already? Don't study it again - get credit!
- Semester schedule: the big picture
  - weeks 1 to 6: designing and using a db (data modelling, SQL)
  - weeks 7 to 9: advanced topics
  - weeks 10 to 12: industry trends, assessment
- Assessment
  - assignment 1: data modelling (20%) .. groups of 3
  - assignment 2: SQL (10%) .. individual work
  - end of semester exam (70%, includes data modelling and SQL)
- How to succeed in this subject
  - practice especially DM and SQL skills
  - use all the learning resources provided

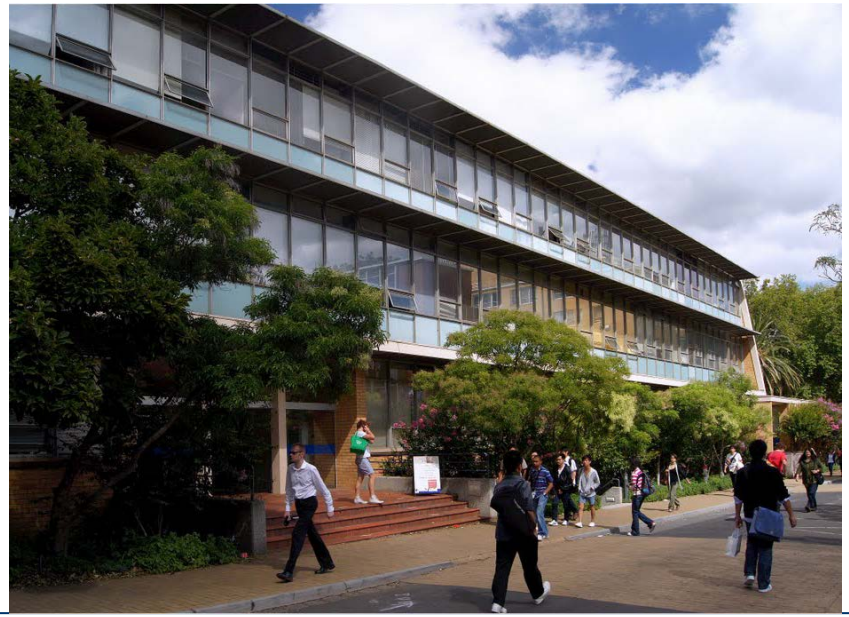
Semester schedule

"Spiral" pedagogical pattern, see http://csis.pace.edu/~bergin/PedPat1.3.html#spiral

Week	Monday	Lecture 1	Lecture 2	Lab / Lecture 3	Hoffer	Extra reading	Homework	Assessment
1	23 Jul	Intro to subject	Intro to databases	Intro to MySQL	ch 1	Wikipedia, Hoffer video, HIstory of databases	noun-verb analysis	
2	30 Jul	Designing a database	Implementing a database	lab: data modelling, SQL , MySQL guide & install SQL script	2	SE Radio 'Relational Databases'	Real Estate model	assignment 1 released
3	6 Aug	Data modelling 1	SQL 1	lab: data modelling , SQL	2, 6	Simsion ch 1, Hoffer video	Uni Courses model	
4	13 Aug	Data modelling 2		lab: data modelling, SQL	3, 7	Simsion chapter 3, Hoffer video	how would you model an *invoice*?	
5	20 Aug	Normalization	Physical design	lab: SQL skills 1 & Solutions	4	Simsion chapter 4, Hoffer video, Kent (1983) Normalization		assignment 2 released
6	27 Aug	SQL 2		lab: SQL skills 2	5	podcast on 'SQL' MySQL data types		Asst 1 due
7	3 Sep	Databases in applications	Web apps	lab: SQL skills 3	3, 14	O'Reilly video: Intro to Web		
8	10 Sep	Transactions and concurrency (lecture by Dave Eccles)	Distributed databases (lecture by Dave Eccles)	lab: SQLReferential Integrity & scott.sql	11	podcast on 'CAP Theorem' Panel discussion on distributed		Asst 2 due
9	17 Sep	Database Administration (lecture by Dave Eccles)	Security and Ethics (lecture by Dave Eccles)	discuss Asst 1		MySQL database administration Oracle database administration		
	24 Sep	mid semester break - no classes						
10	1 Oct	NoSQL databases	... continued	discuss Asst 2		Martin Fowler NoSQL overview		
11	8 Oct	guest lecture to be announced	guest lecture to be announced	revision 1: you choose the topics	9			
12	15 Oct	Industry Trends	Wrapup, discuss exam	revision 2: you choose the topics		how Facebook stores data Information Week article		

Labs

- Only run in weeks 2 through 8
- Not assessed, and attendance not recorded
- Demonstrator is there to help
- You can work in labs or at home
- Alice Hoy, Doug McD, and Elec Eng buildings
- Tuesday - Friday
- Lab exercises on LMS

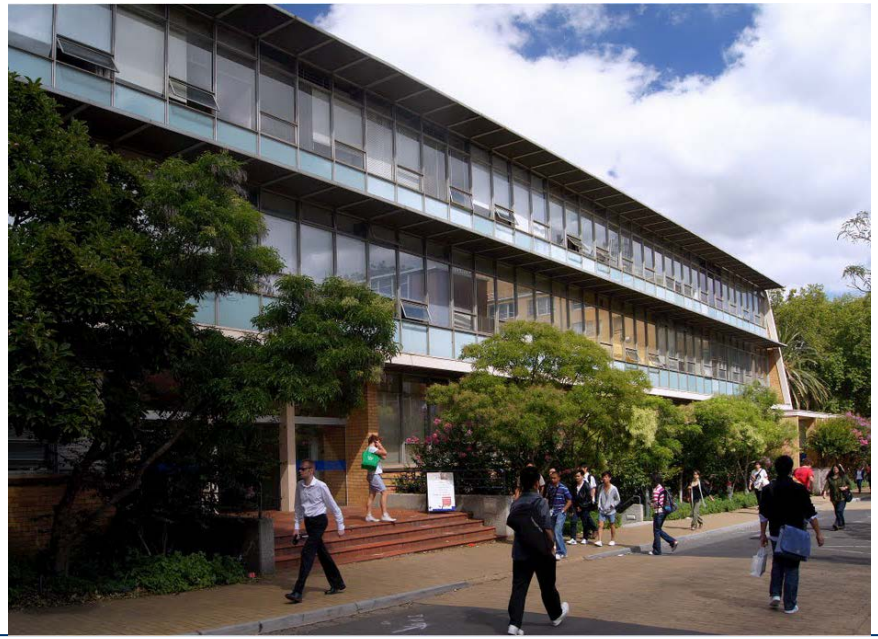


Lab exercises

- Week 2 – 4 = data modelling, SQL

  (bring paper and pen for modelling!)

- Weeks 5 – 8 = SQL programming
  - a: learn by running example SQL provided
  - b: write SQL in response to a question



Using database software

- We will use *MySQL* as server and client in this subject
- You can use either:
  - the University's database server
    - accessible from labs, or from home via VPN
    - your assignment 2 must be able to run on this server!
  - or, your own computer
    - do lab exercises and assignments at home
- Server address: info90002db.eng.unimelb.edu.au : port 3306
    - your username and password will be given out in first lab
    - not available outside the university without a VPN
- If you want to use your own computer …
  - download MySQL from http://dev.mysql.com/downloads/mysql/
  - get both Server and Workbench

Teaching resources and LMS