INFO20003 Database Systems

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WELCOME!

Let's get to know you first

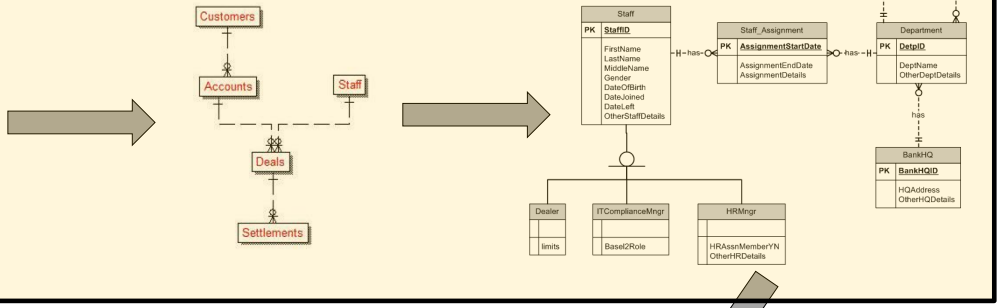
- Please go to:

PollEv.com/rbor

What this subject is all about

Organisational Description and Problem Area

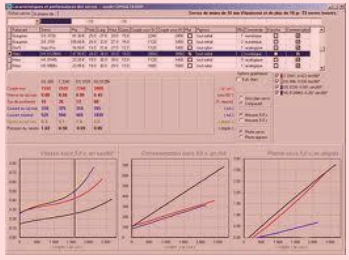
- An investment bank wants to have a database to provide it with the ability to store information about its trading operations. The bank essentially works with customers by providing the capability for trading stocks, shares and other commodities. The bank has three branches in which exist a number of departments. Departments have a department manager who supervises a number of staff within the department. A set of accounts are used to store information about the currency of the organisations operations. Accounts can be customer accounts or internal "house" accounts, each of which allow trades to be made upon them. There are a number of account types. There are many customers and customers may have one or more contacts. Customers have a facility for lending money to pay for their purchases of stocks and commodities. Staff make deals on the behalf of their customers using a funding source and keeping track of settlements on the deals being made. There are many types of deal to be made. Settlements are full or partial payments of the deals and are recorded whenever a payment is made.
- Please note that this section is purely made up and by all means is a very short description of a real investment bank (although many details have been left out and wide ranging assumptions have been made.



MODELLING

SQL

ARCHITECTURE / INTERNAL WORKINGS



SQL Queries

```
select val from sales
where id = max;
```

Results

Process

Access

Store

Database System

Week by week schedule

- **LMS** (up to date) allow minor changes here

Week	Lecture 1	Lecture 2	Tutorial	Lab	Assessments
W01 3-Aug	1. Introduction to the Subject and Database Systems	2. The Database Development Process	MySQL Overview/Installation		
W02 10-Aug	3. Introduction to ER Modelling	4. Relational Model	Tutorial: Introduction to Database Development	Lab: ER modelling with MySQL Workbench	
W03 17-Aug	5. ER Example with MySQL Workbench	6. Hands-on Modelling	Tutorial: Conceptual and Logical Modelling (ER)	Lab: ER modelling with MySQL Workbench continued	A01 ER post
W04 24-Aug	7. Relational Algebra	8. SQL	Tutorial: ER modelling case study	Lab: ER modelling case study	
W05 31-Aug	9. SQL Summary	10. Storage and Indexing	Tutorial: Relational Algebra and translation to SQL	Lab: SQL Skills	**A01 ER DUE Friday**
W06 7-Sept	11. Query Processing-Part 1 (Selection & Projection)	12. Query Processing-Part 2 (Joins)	Tutorial: Indexing and Storage	Lab: More SQL Skills	A02 SQL post
W07 14-Sept	13. Query Optimization-Part 1	14. Query Optimization-Part 2	Tutorial: Query Processing	Lab: Even More SQL Skills	
W08 21-Sept	15. Normalization	16. Normalization (hands-on)	Tutorial: Query Optimization	Lab: Query Optimization using Execution Plan	**A02 SQL DUE Friday**
W09 28-Sept	17. Database Administration	18. Transactions	Tutorial: Normalization	Tutorial: Normalization	
	Mid Semester Break	**Mid Semester Break**	**Mid Semester Break**		
W10 12-Oct	19. Data Warehousing	20. Distributed Databases	Tutorial: Database Administration and Transactions	Lab: Database Admin: Backup and Recovery	
W11 19-Oct	21. Introduction to NoSQL	22. Adaptive databases for the future (nonexaminable: introducing database research avenues)	Tutorial: Data Warehousing	Lab: Transaction exercise using MySQL Workbench	**A03 QP/QO Quiz**
W12 28-Oct	23. Review 1	24. Wrap up and Review 2	Tutorial: NoSQL	Tutorial: Exam FAQs	

Organization

1. LECTURES — Teach concepts

2. TUTORIALS — Apply

3. LABS — Practice at home

COMPLEMENTARY

Assessments:

1. Assignment 1: 10% (ER modelling)
2. Assignment 2: 10% (RA & SQL)
3. Assignment 3 **(Quiz)**: 10% (Query Processing/ Optimisation)

} Hurdle 1 (15%)

BOTH REQUIRED

4. Weekly quizzes: 10% (1% per week)
5. **Final Exam: 60%**

} Hurdle 2 (35%)

A note on weekly quizzes

- 10 weekly quizzes, 1 mark worth each (low stakes)
- Short multi-choice questions, 5 questions, 10 mins
- Published on Fridays 6pm, due Monday 10am 9 days after
- You can attempt the quiz whenever you are ready BUT
  - It has to be during this timeframe
  - You have 10min to complete once started (no pause/stop)
- Purpose is to *practice* and emphasize important things
  - Don't worry if you don't get things right (learning experience)

INFO20003 Staff

- **Lecturer**: Renata Borovica-Gajic
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- **Associate Lecturer**: Farah Khan(contact for extensions)
  - Email: farah.khan@unimelb.edu.au

- **Head Tutor**: Colton Carner
  - Email: colton.carner@unimelb.edu.au
- Tutors: Benedict, Sehrish, Ibrahim, Xiuge, Firman, Gilbert, Oscar, Neven

Colton **Benedict** **Sehrish** **Ibrahim** **Xiuge** **Firman** **Gilbert** **Oscar** **Neven**

Weekly engagement

At home

- Watch pre-recorded videos (in Modules)
- Attempt weekly quizzes (graded 1 mark each, 10 min long)
- Attempt individual assignments (A1 and A2 assignments, A3 quiz)

Live (on Zoom)

- One live lecture Q&A on Wednesdays 1:15pm (now)
- One tutorial per week (need to enrol)

Support

- Three tutorial/lab consultations (Mon 10am, Wed 12pm, Fri 5:15pm)
- Use ED discussion board for questions
- Slack channel (study groups, connect with peers, communicate during tutes)

Now your turn…

Are you interested in becoming a student representative?

(send me an email if yes)

Let's now practice

Database development lifecycle

- Role play (breakout groups)
- Topics:
  - Lending books from a library
  - Issuing fines by police for COVID ban violators
  - Booking check ups with doctors
- Split in two teams (customers and database designers)
- Customers:
  - Drive the conversation about requirements
- Database designers:
  - Clarify requirements, identify objects (entities)/connections

At this stage, this is still hard – but we will continue next week