Database Systems 3

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Recommended text: Thomas M. Connolly, Carolyn E. Begg 2014, Database Systems: 6th Ed., Pearson [ISBN: 9780132943260]

Lecture notes: the notes given in class are sufficient and necessary for assessment and final exam. The above text is recommended further reading but is strongly recommended for students who find database concepts difficult and who need additional explanations. NB extra notes, addenda, corrections etc will be carried out in class. **Therefore attendance at classes is critical to receive the full and proper set of notes.** Prerequisites to understanding this subject include Database Systems (SQL) and Operating Systems. If you are weak in these subjects you are warned that you may need to study from an early stage to avoid difficulty in this subject.

The past exam papers serve as the set of exercises for each section of the course to allow you to become familiar with the style, type and format of possible questions. Solutions to these will only be given in class/practical on request i.e. may not be available at the end of the year outside of timetabled hours. See Exams website.

The exam format will be published at a later stage. But will cover the 4 LOs, general concepts/ admin, concurrency, recovery, security.

Time: 2 lecture + 2 practical hours/week

Course Overview : http://courses.cit.ie/index.cfm/page/module/moduleId/8765

Learning Outcomes (LO): On successful completion of this module the learner will be able to

1. Explain database systems architecture and data management concepts.
2. Specify appropriate transaction controls for recovery and concurrency in a multi user database management system.
3. Devise appropriate security measures for a multi user database.
4. Apply concepts of recovery, concurrency, security and data management in a multi-user environment.

Assessment Breakdown	%
Course Work	30%
End of Semester Formal Examination	70%

	Outcome addressed	% of total	Assessment Date
Formal End-of-Semester Examination	1,2,3,4	70%	Semester End

Coursework Breakdown

A combination of practical/skills evaluation, short answer question, research and written report relating to the application of database recovery, concurrency, security and database administration in a multi-user database environment. To investigate the implementation of DB theory and aspects of DB administration in a multi-user environment.

Assessment of practical work is difficult and may be taken **on attendance and possible completion** of practicals. Alternatively, aspects of the practical assessments may be written and marked outside of the practical. The assessment therefore allow for two types of assessment: actual practical work and secondly, problem based questions requiring understanding of the notes as opposed to learning off.

Practicals

The practical itself is therefore a time to demonstrate that you can do the required elements of the practical i.e. it should be treated as a test, not a place where the lecturer explains what you should do. Any questions that were dealt with in the class explaining the practical or that are based on the theory may **not be answered during the practical** i.e. it is assumed that you do any necessary work in advance. Practicals may be explained in the class preceding the practical; The practical specification may also be given out at that time. Therefore attendance at that class is required.

Database 3 practical labs: each section may take a number of lab hours

The first practical will review necessary SQL and utilities required by the remaining practicals.
Section 1: start with a single VM with Windows OS installed, plus latest install programs(zips) for Ingres and MySQL (Server & clients), plus sample databases (in text or comma delimited form). Students perform installation, configuration & migration.

Section 2: a correct version of 1 with DBs and databases correctly installed, write stored procedures e.g. MySQL triggers/event scripts to run on DB

Section 3: Students run concurrency, recovery, security tasks.

Section 4(optional): a correct version of 2 on one VM, plus a second VM clone in a network. Student try set up a Master – Slave recovery system.

If you miss a practical you may need to do the practical outside of class as it may contain elements required by subsequent practicals. Note: the order of the practicals may change.

http://dev.mysql.com/doc/refman/5.0/en/server-system-variables.html

Resources: http://community.actian.com/wiki/Workshops; http://downloads.actian.com/download/sql.pdf

Website: ACM 2014, *Keywords: Database, Transactions, Concurrency, Recovery, Security*, Association for Computing Machinery http://www.acm.org/

Website: Slideshare 2014, *Keywords: Database Management, recovery, concurrency, security*, http://www.slideshare.net/

Website: Tutorialspoint 2014, *Keywords: Database Management, Recovery, Concurrency, Security*, http://www.tutorialspoint.com/