Lecture 0: Overview of cs1106/cs6503

cs1106+ Overview

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Summary

Details of cs1106/cs6503 module. Overview of module content and coverage. Importance of databases and database systems.

cs1106/cs6503 Module Details

cs1106 basics

Who

Me

Dr Kieran Herley; WGB G63;
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You

1st Year CS also DS&A; MSc (Bio); MSc (DS&A); Others (Erasmus/JYA?) – ask

What

Title Introduction to Relational Databases (5 credits)

When and Where

Lecture	Tue	1-2pm	BHSC G01
Lecture	Wed	9-10am	WGB 1.07

Resources

Canvas (soon)

- `https://ucc.instructure.com/courses/14992`
- Lecture slides (.X4.pdf, .pdf). Lab sheets. Handouts. Examples.

Text

- No assigned text for this module.
- Useful reference: *Learning SQL (2ed edition)* by Alan Beaulieu. O'Reilly (2009). Approx £18

Module assessment

Breakdown

Year's work	30 %
End-of-semester exam	70 %

Coverage Lecture and lab material

Year's work 2 in-class tests (15% each)

- Wed 16 October (TBC)
- Wed 13 November (TBC)

End-of-Module Exam

- Formal, 90-minute paper in December
- Details later

Plagiarism

1. Plagiarism is presenting someone elses work as your own. It is a violation of UCC Policy and there are strict and severe penalties.
2. You must read and comply with the UCC Policy on Plagiarism www.ucc.ie/en/exams/procedures-regulations/
3. The Policy applies to all work submitted, including software.
4. You can expect that your work will be checked for evidence of plagiarism or collusion.
5. In some circumstances it may be acceptable a reuse a small amount of work by others, but only if you provide explicit acknowledgement and justification.
6. If in doubt ask your module lecturer prior to submission. Better safe than sorry!

cs1106 Overview

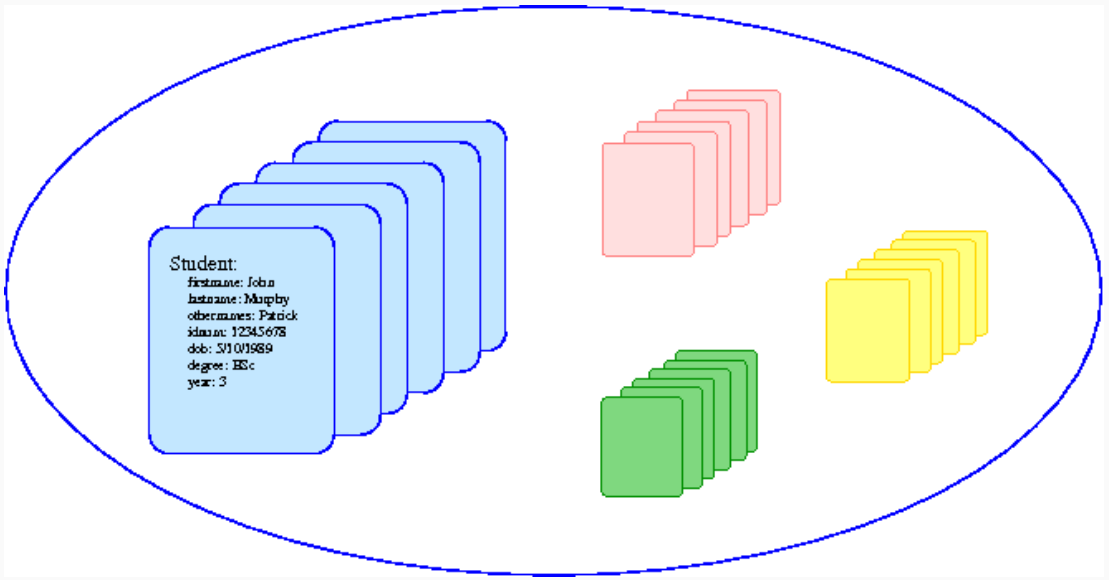
Record keeping

Source: British Museum

What is a database?

Database A shared, structured collection of logically related data designed to meet the information needs of an organization

Typical example University academic records



- Student details (name, id, address(es), dob)
- Academic info. (programme, year)
- Marks (modules taken and marks obtained)

Database systems

Database System = Database(s) + Database Software

Database Software

- Database Management System (DBMS) provides software infrastructure to manage multiple databases with differing structures, diverse content etc.
- Provides tools to allow data to be *manipulated* and *queried*

  Manipulation add/delete/update data

  Query "interrogate" data to obtain information of interest

Database(s)

- Organization may need multiple databases
- University: Academic records, payroll, library catalogue, accounts

Why databases matter

"Traditional" DB Aplications

Databases form foundation of IT systems in areas such as public administration (CAO), patroll, banking (account info.), retail (inventory)*etc.*

More Novel DB-Reliant Systems

Amazon. YouTube. Facebook. Ebookers. Wikipedia. Ebay. Genbank.

Why databases matter cont'd

https://www.forbes.com/billionaires/#7cb5ebe3251c

America's second richest man needs no introduction (Forbes list # 2 at $96B in 2019)

Larry Ellison Oracle founder (Forbes list # 7 at $62B in 2019)

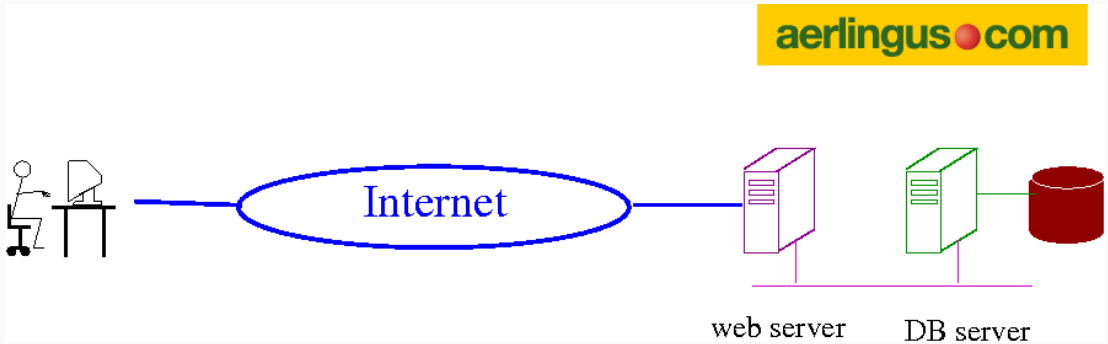
Source: Forbes

Observation

Databases are big business!

E-Commerce and databases

- Most e-commerce sites are built around database "back-end"
- Typical example– Airline reservation system



  - Database holds the data (flight schedules, prices, availability)
  - Web-server holds programs to await and respond to customer enquiries
  - When submits booking form relevant program is "awakened" which
    - extracts details of customers request
    - queries database for suitable flights
    - generates response (web page) for return to customer

Some DB-dependant websites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    - MySQL – standard database software

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  - MySQL – standard database software
- Applying DB concepts to sample IT problems
- Designing simple DBs

Notes and Acknowledgements