L0: Overview

CS1106/CS6503: Intro to Relational Databases

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Semester One, 2023-24

School of Computer Science & Information Technology
University College Cork

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 and what

Who

Me

Dr Kieran Herley; WGB G63;

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You

1^{st} Year CS also DS&A

MSc (Comp. Biol); MSc (DS&A)

What

Module Codes CS1106 = CS6503

Title Introduction to Relational Databases

CS1106 basics: where and when

Lectures (11 **weeks**)

Tue	1-2pm	BHSC G.01
Wed	9-10am	WGB 1.07

Labs (starting week 2 October)

Resources

Canvas

- Lectures: slides and recordings
- Other: Lab sheets. Handouts. Examples.

Text

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

Module assessment

Breakdown

CA	30 %
End-of-semester exam	70 %

CA

- In-class test, Tuesday, 7 Nov 2023 (TBC)

End-of-Module Exam

- Formal, pen-and-paper 90-minute exam in December
- Details later

Plagiarism

1. Plagiarism is presenting someone else's 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 to 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/CS6503 Overview

Need for 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

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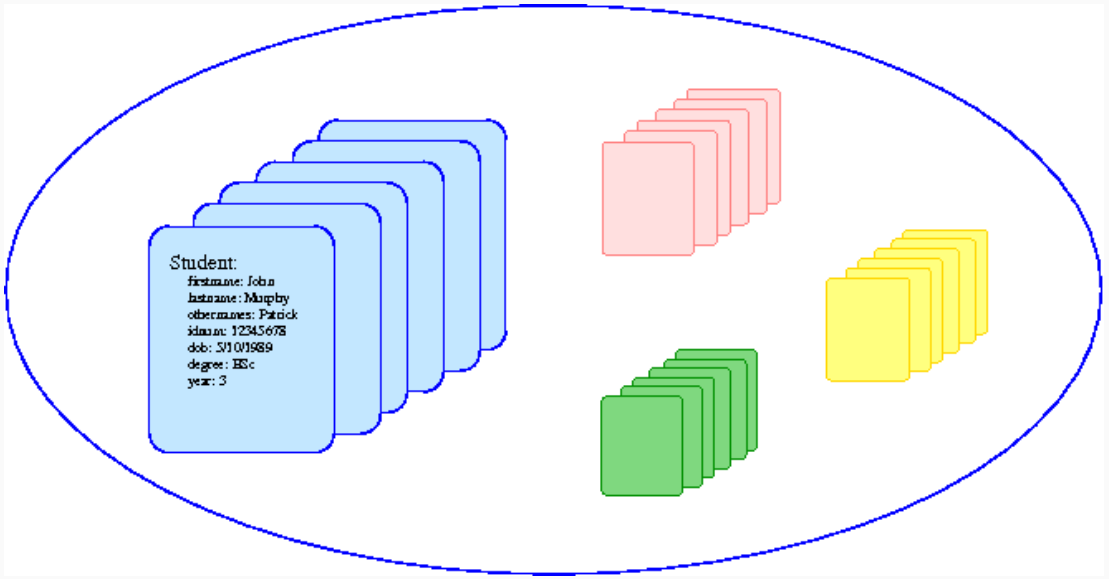
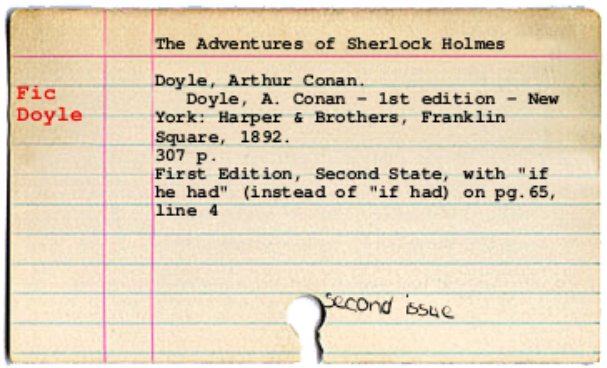
Typical example University academic records



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

Doing things the old-fashioned way

Old-fashioned library index



Typed index card

`Source: Wikicommons,`

Doing things the easier way: 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

Why databases matter

"Traditional" DB Aplications

Databases form foundation of IT systems in areas such as public administration (CAO), payroll, 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

World's sixth richest man needs no introduction (Forbes list # 6 at $104B in 2023)

Larry Ellison Oracle founder (Forbes list # 4 at $107B in 2023)

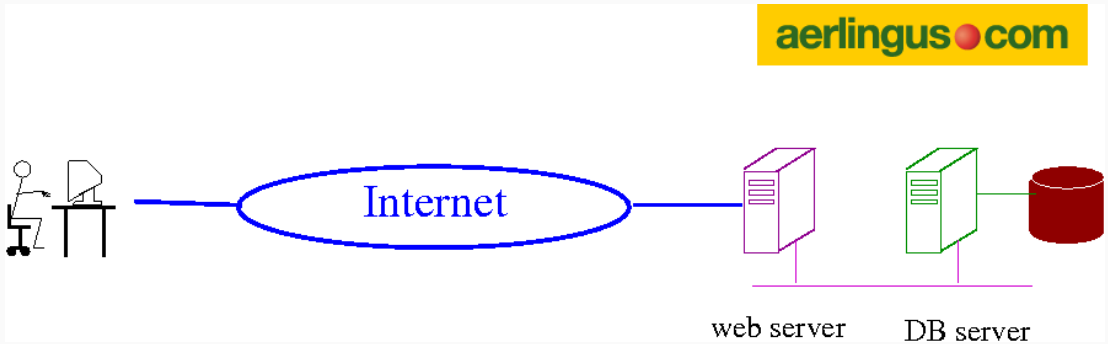
Source: Forbes

Observation

Databases are big business!

E-Commerce and databases

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



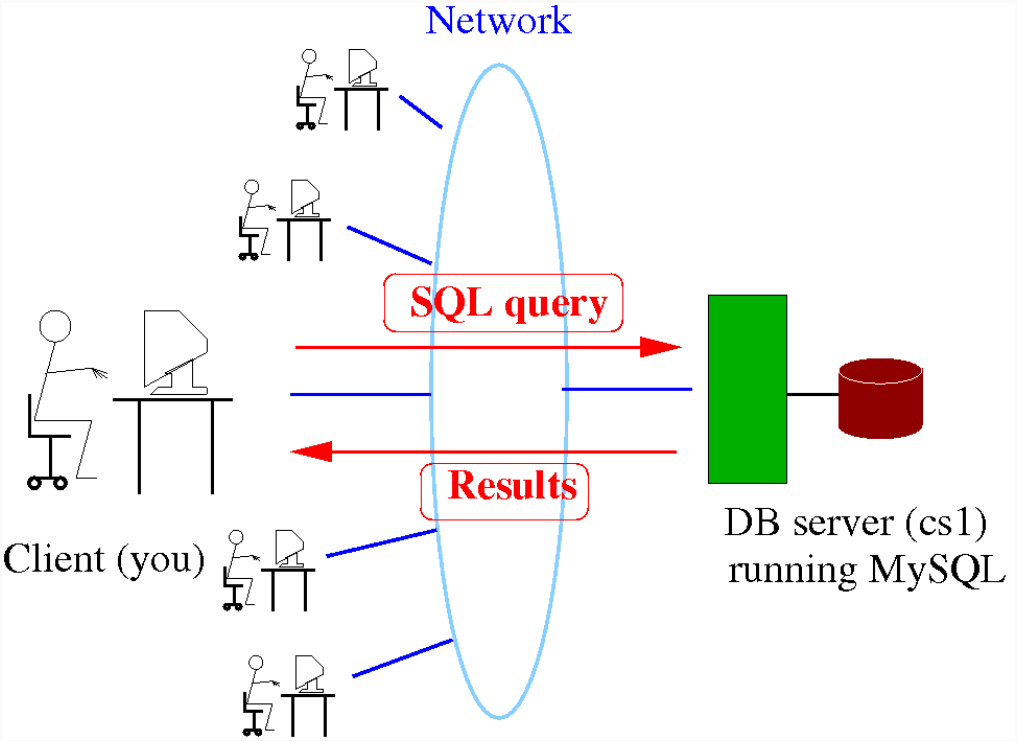
  - Database holds the data (flight schedules, prices, availability)
  - Web-server software interrogates DB to process user's interaction

Some DB-dependant websites

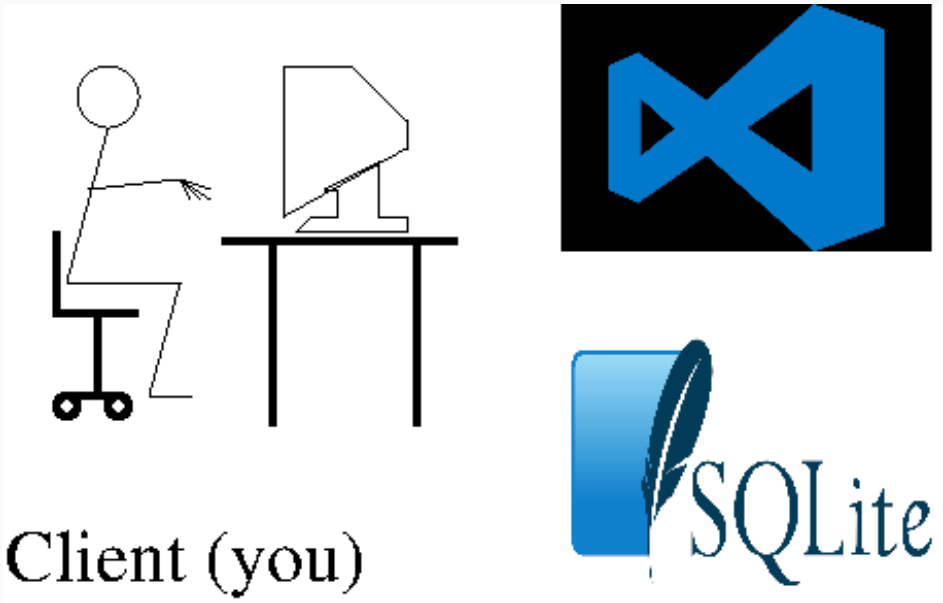

What we will study in CS1106/CS6503

- Structure and organization of relational DBs
- Specifying and manipulating DBs
- Using
  - SQL notation for DB queries
  - VSCode plus SQLite our database environment
- Applying DB concepts to sample IT problems
- Designing simple DBs

A typical enterprise DB setup



Our approach for CS1106/CS6503



- VSCode plus SQlite: simpler and more portable
- Will use lab machines, but easy to install on laptop