

Database

Flat file to relational databases

Essential part of web

- Barely a website without a database attached
- User account = database
- Stats = database
- Interactions = database

Old school paper records

- We would store this data on paper, student record staff record etc.
- Leads to a lot of weight, space and most important mistakes.
- Data integrity - importance concept with database data
 - Just because they word is spelt correctly doesn't mean it's the right word

Tables and DBMS

- We visualise the data as tables - tables of linked data
- We organise them into fields (columns) and records (rows)
- In reality.. This is for us and our monkey brains
- The DBMS deals with it all under the hood
- Extremely efficient storage.

Data vs Information

- Data is a single item, which in isolation means nothing (fields)
- Information is a collection of data put together to generate meaning (records)

Unique identifier

- Each record (row) in a table, needs to be uniquely identifiable.
- Some columns are not suitable for this e.g name.
- Introducing: Primary Key - A field which uniquely identifies each record from another.

Flat file database – Single table

- This is a single table, simple structure
- Not very commonly used
- Simple login system e.g. Private Internet Access

Task: Student

- Generate a list of field names that you think a school would keep on a student in school

Repeating and redundant data

- If data can be calculated from another field don't store that field
 - Redundant data - wastes storage space, processing power makes it messy
- What if another student joins the school... from the same address
 - Repeating data, significant waste of space, leads to terrible integrity issues.

Task: Refine your table

- Remove any fields which could be calculated using other fields
- Remove to another table any fields which could re
- Give this table a name

Task: YouTube Scenario

- Build a table for "viewer"
- Build a table for "video"
- Make sure you consider repeating and redundant data

Link Table

- We need to connect tables together
- The DBMS manages the matching after that, just a link
- Introducing "foreign key" - a Primary key from another table as a way to link records
- Student / address example:

Relationships

- One to One – Employee to Employee details (Sensitive)
- One to Many – car parts to manufacturer
- Many to Many – Students addresses – But can't exist

Task: Update student table

- Link the tables together with an appropriate link table

Task: Update YouTube tables

- Add an appropriate named link table to your youtube scenario