Lesson: Data Modeling and Entities

WMDD 4921

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Databases

- What is a database?

Data Persistence

- **Databases allow us to persistently store data securely in a central location so that it sticks around indefinitely and can be shared with others.**

- Databases must also be fast and reliable.
  - ***Quickly*** insert, retrieve, update, and delete data.

Data Persistence

- To implement a database, your first instinct may be to do one of the following:
  - Store data in files
  - Store data in a spreadsheet (maybe Excel)

Health policy

Analysis

Covid: how Excel may have caused loss of 16,000 test results in England

Alex Hern
UK technology editor

Public Health England data error blamed on limitations of Microsoft spreadsheet

Data Integrity

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- **A poor design can lead to errors, inconsistencies, and missing data!**

Data Modeling

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  - Each entity has **attributes** that describe the entity.
  - Entities can be **related** to one another.

Example: Discography Browser Application

Use Cases:

- The user can choose an artist from a list and see a description of that artist with a list of albums they've released.
- They can choose an album to see the year it came out and a list of songs on the album.
- They can choose a song and see which albums it belongs to.

Constraints: There can be no collaboration albums (meaning no albums with more than one artist), but there *can* be compilation albums (meaning a song can exist on more than one album). There are no singles (meaning no songs without an album).

Come up with **entities, attributes,** and **relationships**