Two database problems

Simple databases with only one table are called **flat-file databases**

id	name	species	age	gender	height
001	Marg	Giraffe	12	F	4.7
002	Molly	Giraffe	6	F	4.4
003	Molly	Giraffe	5	F	4.2
004	Mike	Giraffe	14	M	5.1
005	Sammy	Giraffe	1	M	2.4
006	Rex	Lion	4	M	1.8

Two database problems

Flat-file databases are simple to create and to maintain. You can use simple spreadsheet software to make them

They have a single table of data

But this can cause problems...

Two database problems

Board Game library

Game	Players	Date out	Borrower	Contact
Diplomacy	7	12//04/2024	Doug Greenwood	07711457295
Africa	2–4	15/04/2024	Allan Hill	07850762097
Ticket to Ride	2–5	15/04/2024	Sara Dugood	07711299065
Pandemic	1–4	04/30/2024	Lauren Wiseman	lwmn@gamil.com
Ticket to Ride	2–4	17/05/2024	Alan Hill	07850762097
Cowabunga	2–6	30/05/2024	S Dugood	0711299065
Campaign for North Africa	2–4	05/06/2024	Vijay Singh	vsingh@bing.com
Ticket to Ride	2–5	06/06/2024	Ellen Wise	fluffybunny2@aol.com
Pandemic	1–4	17/06/2024	Allan Hill	07850762097
Settlers of Catan	2–4	03/07/2024	K Blackman	01603 543217
Ticket to Ride	2–4	07/07/2024	Sarah Dogood	07711299056

A board game club allows members to borrow games. A flat-file database is used to record who has borrowed which game

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Some data can be repeated

This is called **data redundancy**. It means that the database is inefficient to store and query

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Data redundancy is a major problem when database tables get very large

Two database problems

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Data can also be **inconsistent**. This may be because of data entry errors or due to data being processed and updated in ways that introduce inconsistencies

Two database problems

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When there is **data inconsistency** how do we know which instance of the repeated data is correct?

Two database problems

Data redundancy is when the same data exists in multiple places within a database. It means that the storage and processing of the database is inefficient

Data inconsistency is when the same data exists in multiple places within a database but the instances of the data are not identical