Multi-table databases

Databases can have more than one table

- a table stores data about a type of thing

Using more than one table allows us to avoid **redundancy** - data being repeated more than once in the same table

Multi-table databases

Tables are linked by using the **primary key** in one table as a field in the other table

In the other table this is called the **foreign key**

The linking field is important to identify

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

Data tables linked together using the keeperID

keeperID	keeperName	phone	e-mail
001	Ford	321	iford@thezoo.com
002	Wright	521	nwright@thezoo.com
003	Bufford	894	wbufford@thezoo.com
004	Ford	400	cford@thezoo.com

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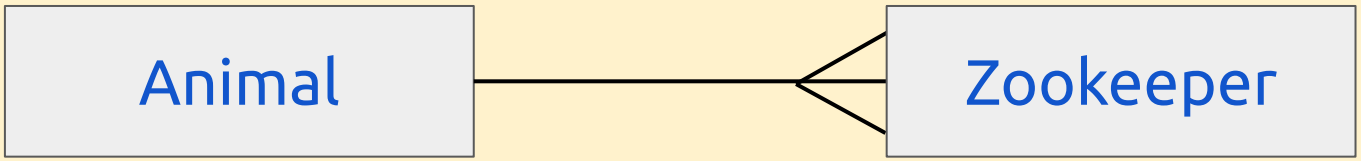
We show how data tables are linked using an **entity relationship diagram**



The two tables are linked in a **one to many relationship** - each zookeeper can look after more than one animal

Multi-table databases

A database with more than one table is called a **Relational Database**

Multi-table databases

Here is a database for use in a school:

Each class has many students in it

Each class can be taught by more than one teacher

What other tables could be added?

Multi-table databases

There are pros and cons to different sorts of database:

Flat-file database	Relational database
+ simple to build and maintain	- more complex to design and build
+ can use spreadsheet software - easy and quick	+ data only needs to be stored once - reducing redundancy
- data is repeated which is a waste of space (**redundancy**)	+ easier to update - reduces inconsistencies
- updating repeated data takes longer and can lead to errors	- need specialist software and expertise
- this leads to **inconsistencies**	