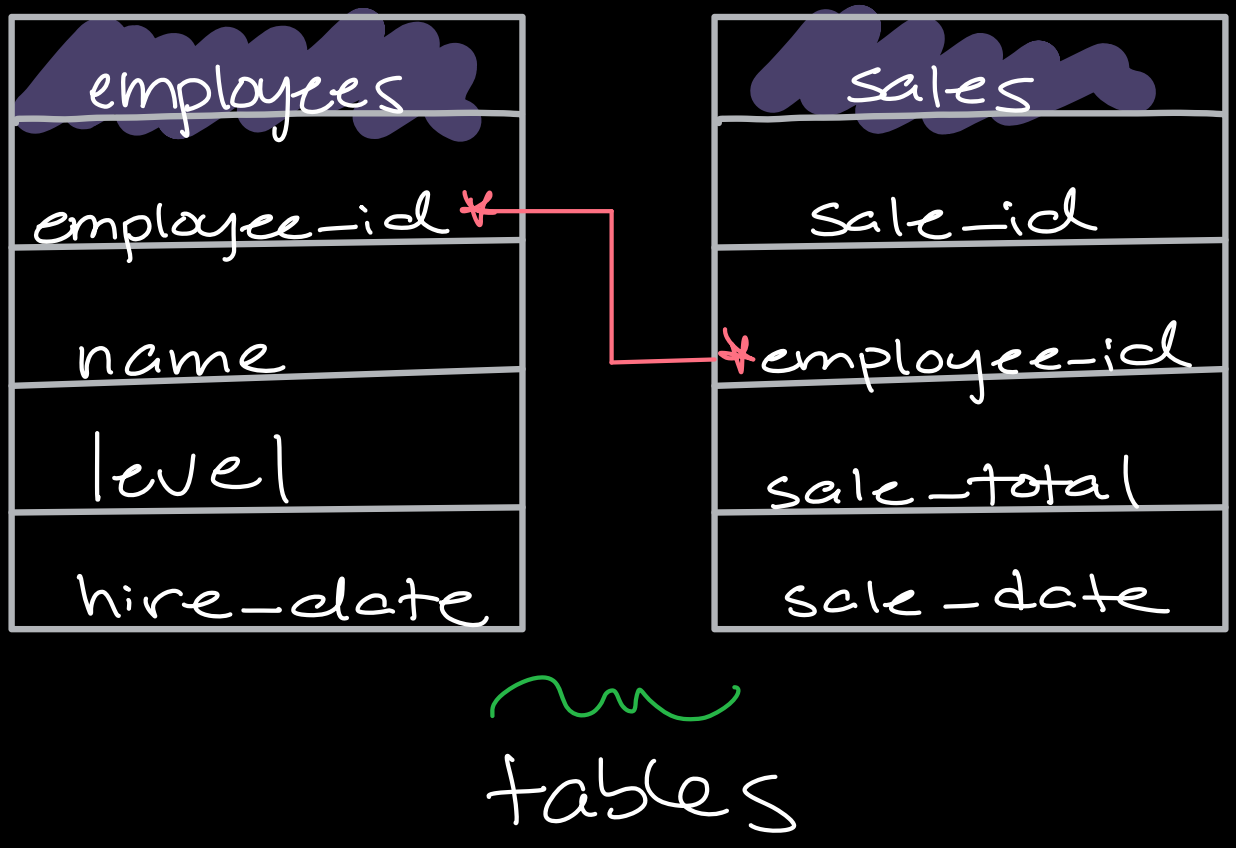
What is a relational database?

A relational database is a type of database that stores and provides access to data that are related to each other.



employee_id	name	level	hire_date
37	Joanne	1	1/22/22
38	Alex	1	12/13/21
39	Tyler	2	10/11/19
40	Asia	3	9/4/18

sale_id	employee_id	sale_total	sale_date
467	39	$467	12/4/20
468	39	$126	1/16/21
469	38	$12.50	2/10/21
470	40	$117	6/12/21

employee_id	name	level	hire_date
37	Joanne	1	1/22/22
38	Alex	1	12/13/21
39	Tyler	2	10/11/19
40	Asia	3	9/4/18

In a table, fields are represented as columns and records are represented as rows.

Why do we use tables?

“Originally, databases were flat. This means that all data was stored in one long text file. Each entry contained multiple different fields about a particular object or person were grouped together as a record. These flat databases were called a tab delimited file. Each entry in the tab delimited file is separated by a special character, such as a ‘|’. ” (Source: howstuffworks.com)

EmployeeID, name, level, hireDate, saleID, saleTotal, saleDate| 37, Joanne, 1, 1/22/22| 38, Alex, 1, 12/13/21, 469, $12.50, 2/10/21|39, Tyler, 2, 10/11/19, 467, $467, 12/4/20, 468, $126, 1/16/21| 40, Asia, 3, 9/4/18, 470, $117, 6/12/21

- Difficult to search for specific data.
- Need to loop through the entire file to gather related information like total sales for the company’s lifetime.

The problem:

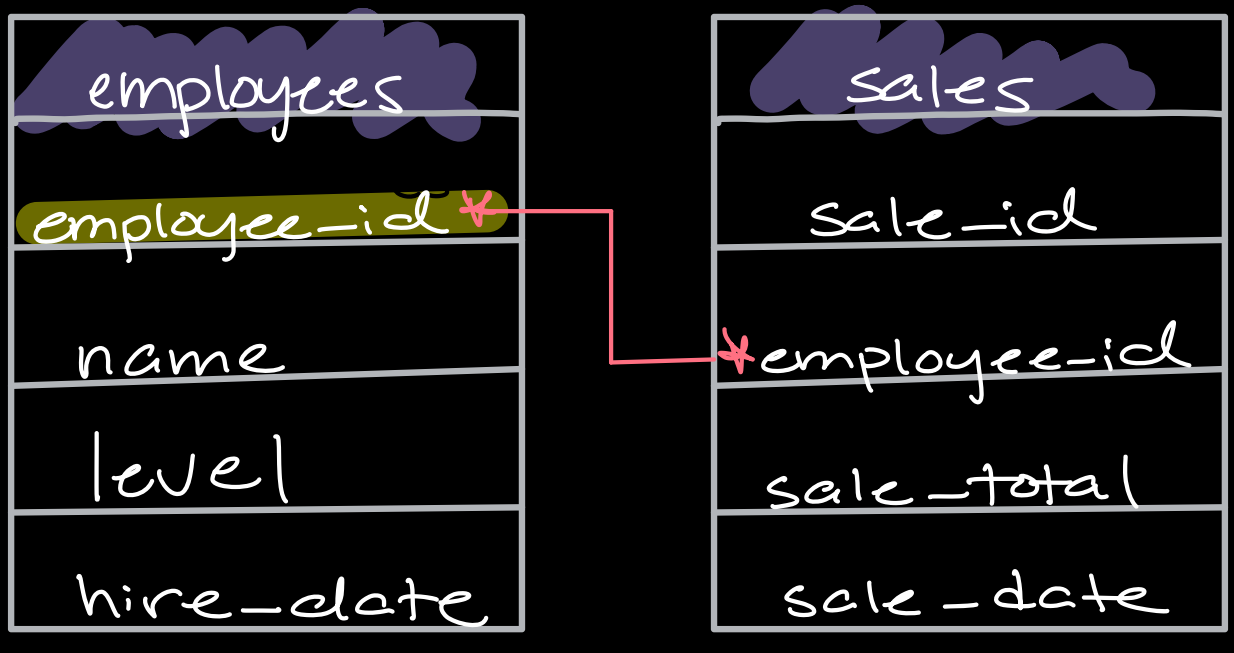
Because all of your data is in one file, it’s difficult to search for specific information or to filter through the data to only pull in data you want to display if you were using your database to populate your UI, for example.

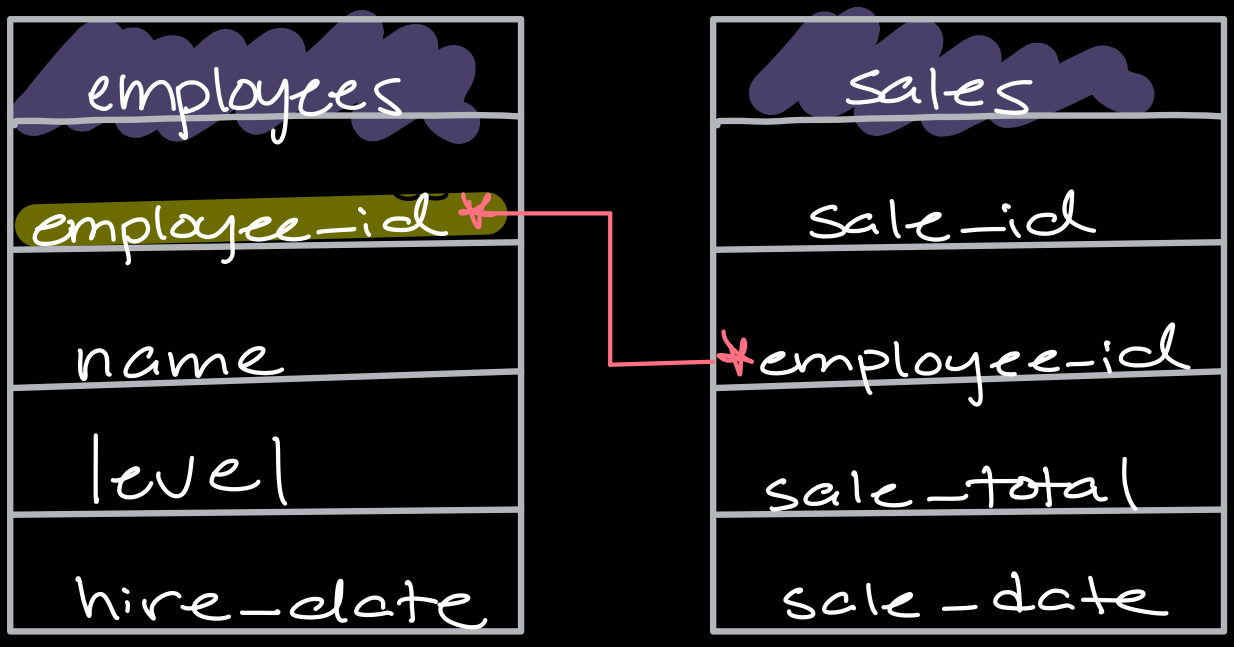
How Is A Relationship Made?

Attributes help us as developers tell entities apart. We can set the 'name' attributes in the employee table to distinguish between different employees. But what if multiple employees had the same name?

To tell them apart we need something that is guaranteed to be a unique key for each employee. This identifying attribute is called a primary key. We created an attribute called 'employee_id' and set this as our primary key because we know it will always be unique and will help us identify our employees.

When this unique primary key is added to a record in an another table, it is called a foreign key in the associated table. This connection between the primary and foreign key creates the relationship between tables.





The illustration is showing by a primary/foreign key relationship between 2 tables.

- Because we are uniquely identifying an employee by their employee ID, that column is the primary key.
- An employee can make multiple sales and thus, their employee ID appears in the Sale table as the foreign key.