POWERING POTENTIAL

Introduction to Databases

Module 1: Databases

Databases

MODULE 1: CONTENTS

- What is a database?
- Relational databases.

Objectives

Introduction to databases

Understand how databases are used commercially

- What are they used for and why?

Describe the different types of objects within a database

- What would you expect to find in a database?

Explore the different ways databases store information

- What kinds of databases are there?

What is a database?

Databases: Module 1

Introduction to Databases

What is a database?

A database is an organised collection of data, containing several different objects

- **Tables:** Columns and rows of data.
- **Schemas:** Structure of data (though some databases do not have schemas).
- **Queries:** How we ask the database for the data we want.

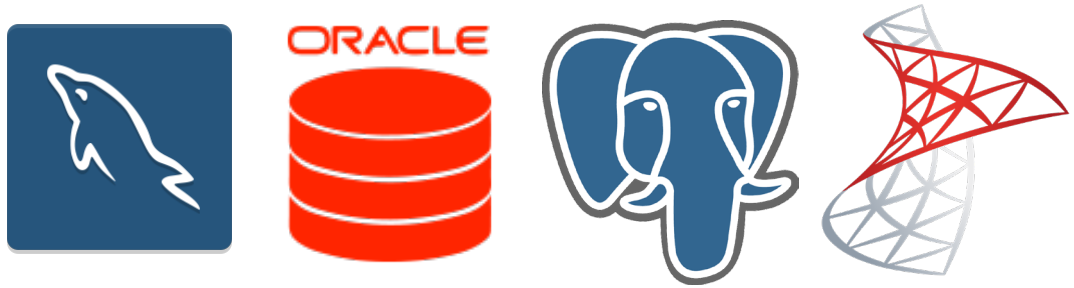
Businesses use databases to model information from the real world

- Modelled in a way to answer some sort of question through the information.

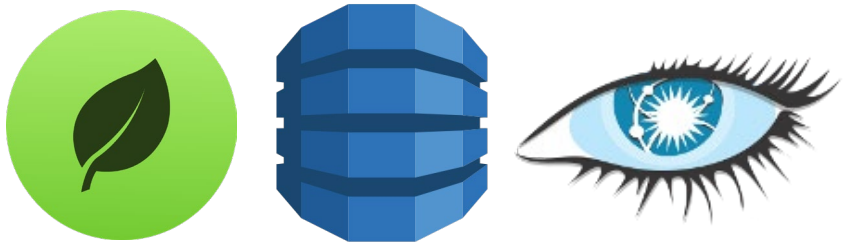
Database types

Typically, databases fall into one of two categories: relational or non-relational.

- In this course, we will work with relational databases.
- We will use SQL to ask the database for the information we need.



Relational

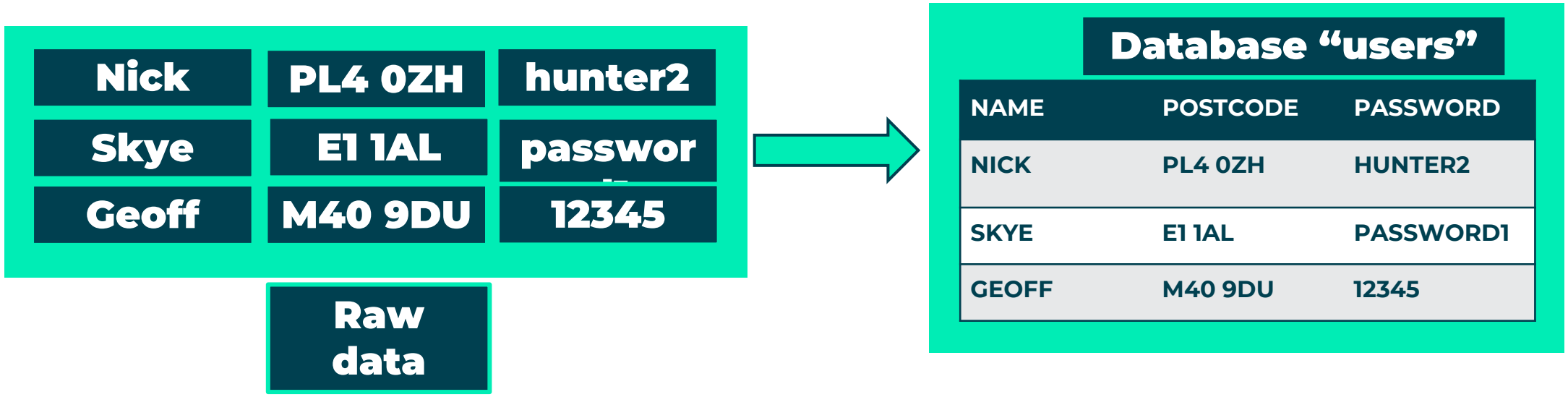


Non-Relational

Database objects

Transforming data into information is extremely important

- Thanks to databases, we can store the information we need in the format that we want.
- Before, ledgers might have been used to store information – even in corporations or governments.
- Today, everybody will have stored information in some kind of database.



Looking into the database

Database ‘lunch’

NAME	CITY	ORDER
GAZ	LONDON	JELLIED EELS
HARRY	GLASGOW	HAGGIS
RODNEY	NEWCASTLE	CHIPS ‘N’ GRAVY

Field: A way to categorise stored data.

Database: A full data set, consisting of a collection of tables.

Record: An instance of fields in a table.

Table: An organised set of a type of data.

Relational databases

Databases: Module 1

Introduction to Databases

Task: GAME Database

Outcome:

- Think about what kind of information is in a typical database and how that information might be structured.

Steps:

10 minutes, in pairs:

- Draw all the different tables that might be stored in GAME's database, and what sort of information you would expect to find in each table.
- For bonus points, see how you might link together some of these tables.

Looking into the database

customers

CUSTOMER ID	NAME	ADDRESS	EMAIL	PASSWORD
1	SIMON	256 BYTE STREET	SI@MAIL.CO.UK	**********
2	MARKUS	47 RED TIE ROAD	MARKUS47@POST.COM	***************
3	EMMA	63 NUMBER LANE	EM@LETTER.BOX	*******

games

PRODUCT ID	TITLE	QUANTITY	PRICE	AGE RATING
1	SHOOT THE COOL GUN 9	8965	79.99	18
2	GUNBLADERS XXII	546	64.99	15
3	PAINT DRYING SIMULATOR 2012	35	37.99	3
4	SITAR HERO	456	45.99	12

orders

ORDER ID	CUSTOMER ID	PRODUCT ID	PLACED	PRICE
1	1	4	2019-08-06	45.99
2	2	3	2019-08-14	37.99

Making the database relational

If we think about something like the GAME database, we can think of a lot of different tables:

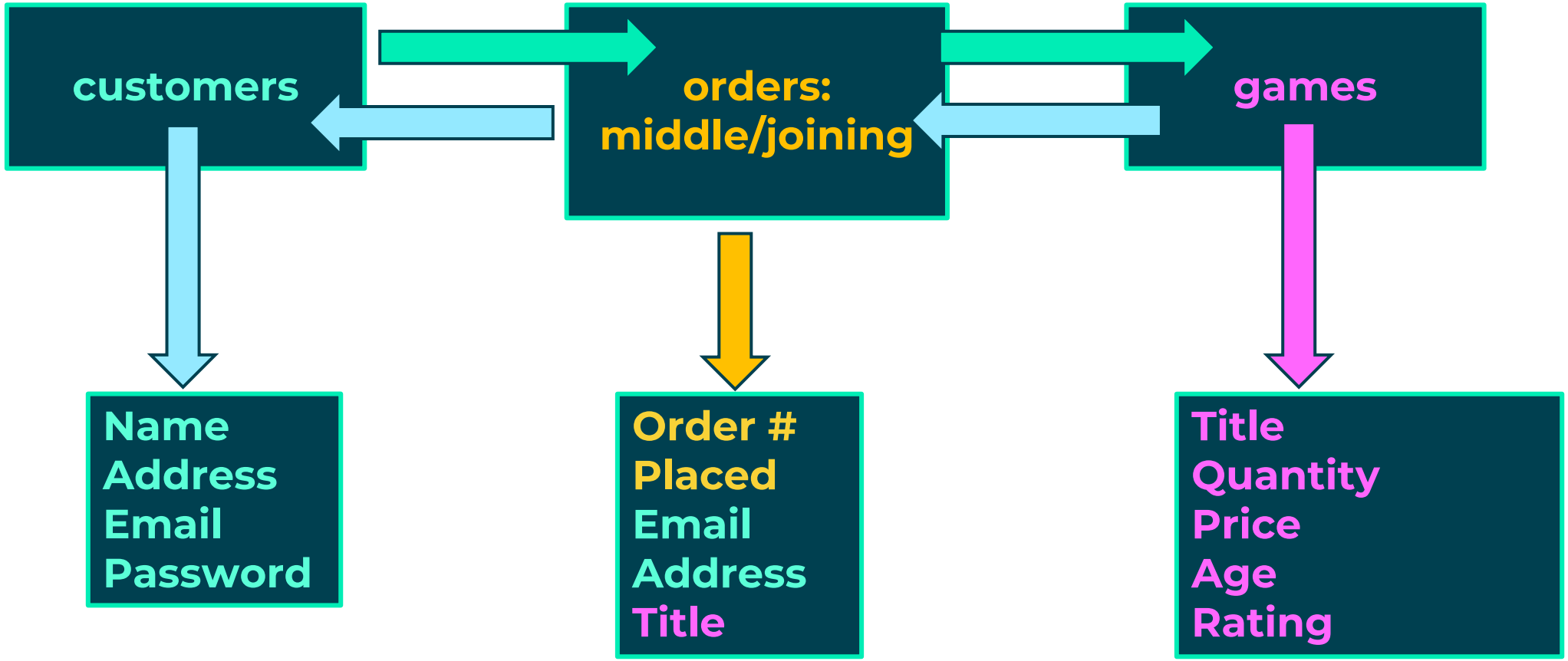
- The **customers** table stores account information.
- The **orders** table keeps track of purchases.
- The **games** table stores information on what titles are sold.

If we create each of these tables individually, we may find data being needlessly duplicated:

- Linking information makes finding data easier. For instance, a **customer** places an **order**, but an order can contain many **games**.

Relationships are the bedrock which underpins relational databases

- Linking tables together allows common data to be stored.



Summary

Databases: Module 1

Understand how databases are used commercially

- Databases are used to organise data and give it context.
- Businesses use it to model real-life content.

Describe the different types of objects within a database

- Databases usually contain tables, fields, records, schema, and queries.

Explore the different ways in which databases store information

- Relational databases store information in a shared way.


Thank you for listening
Any questions?