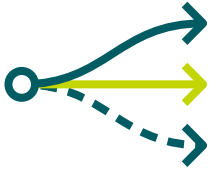




# The Complete SQL Bootcamp for Beginner

# COURSE OBJECTIVE



## Understand Relational Database

Understand the basics of relational database and why use SQL



## Apply basic SQL to query database

Syntax of SQL queries and interact with database to answer daily data related questions



## Data Wrangling with SQL

Able to perform data analysis using SQL techniques to generate powerful insights



## Build a database

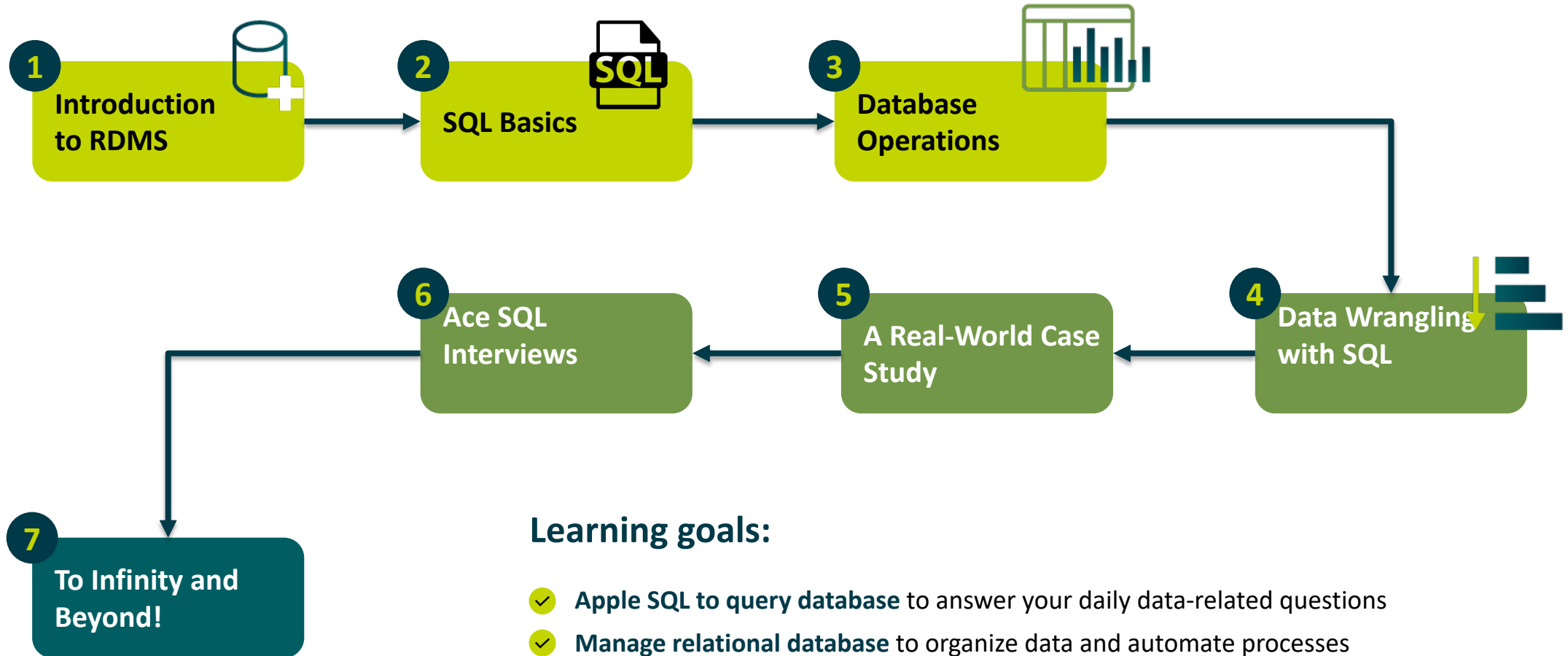
Learn how to build a database and use the relational database management system to conduct data operations



## Ace SQL Interview

Typical SQL interview questions and techniques to ace SQL interviews

# COURSE AGENDA



## Learning goals:

- ✓ **Apply SQL to query database** to answer your daily data-related questions
- ✓ **Manage relational database** to organize data and automate processes
- ✓ **Be Comfortable** in SQL technical interviews

# PART 1: Database

## What is Database (DB)?

A database is an organized collection of data, from which a computer program can quickly select or manage desired pieces of data.

Any Collection of related information

- Phonebook
- Shopping list
- IMDb movie rating
- Whatsapp User base
- To-do List

Data can be stored in different ways

- On Paper
- Computer
- Your brain
- This slide
- Facebook comment sections

# PART 1: Database

Computer + Database = <3

## Amazon

- Keep track of Products, Reviews, Purchase Orders, Users etc.
- Gigantic ocean of information need to store and be readily available
- Data is vital to Amazon functioning
- Security is essential as the database stores personal information
- Information is stored in computers (servers)

vs

## Shopping List

- Keep track of consumer products need to be bought
- 10-20 pieces of information need to be readily available
- Information is for convenience sake, not necessarily for shopping
- Information store in paper or someone's memory

**Computers are great at keeping track of large volume of data.  
How does a computer manage data or database?**

# PART 1: Database

## Database Management System!

A **database-management system (DBMS)** is a computer-software application that helps user manage database. A general-purpose DBMS allows the definition, creation, querying, update, and administration of databases.

- Make it easy to manage large amount of data
- Handles security
- Backups
- Import/export data
- Interact with other software applications

DBMS: SQLite3, MySQL, PostgreSQL, MongoDB etc.

Comparison (Datatypes, Advantage, Disadvantages, When to use, When not to use):

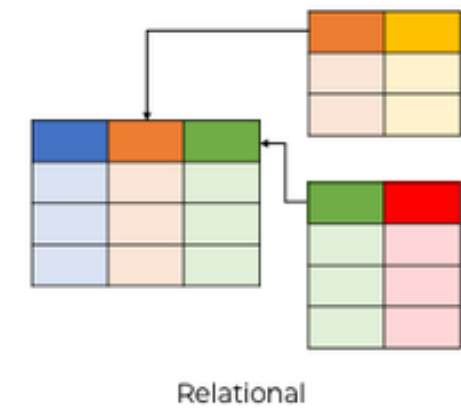
<https://www.digitalocean.com/community/tutorials/sqlite-vs-mysql-vs-postgresql-a-comparison-of-relational-database-management-systems>

# PART 1: Database

## Database Type

### Relational Database (SQL)

- Organize data into one or more tables
  - Each table has columns and rows
  - A unique key identifies rows



Product Table

Product ID	Product Name	Product Price	Product Color
1	Product 1	100	Green
4	Product 4	50	Yellow
15	Product 15	88	Blue
29	Product 29	97	Green
8	Product 8	25	Green
9	Product 9	10	Black

Customer Order Table

Order ID	Customer Name	Payment	Order Date
10058	Michael	Visa	20190413
10045	Kate	Visa	20190329
10047	John	Mastercard	20190530
10099	Wayne	Cash	20170823
10084	Jason	Amex	20180102
10087	Leo	Visa	20190617

# PART 1: Database

## Database Type

### Non-relational Database (NoSQL)

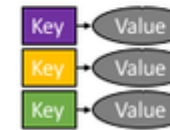
- Organize data is anything but a traditional table
  - Key-value stores
  - Documents (JSON, XML etc.)
  - Graphs
  - Flexible tables



Column



Graph



Key-Value



Document

### Documents

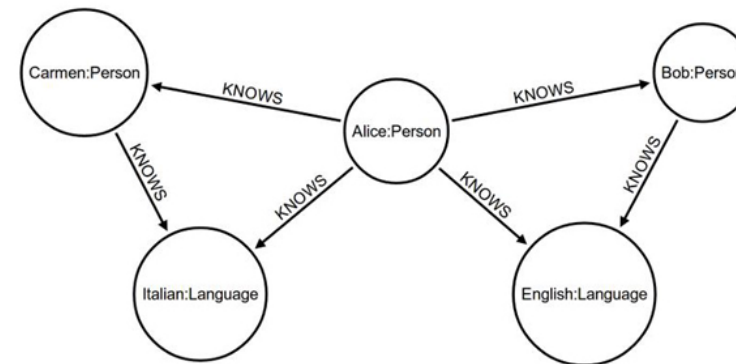
#### XML

```
<empinfo>
  <employees>
    <employee>
      <name>James Kirk</name>
      <age>40</age>
    </employee>
    <employee>
      <name>Jean-Luc Picard</name>
      <age>45</age>
    </employee>
    <employee>
      <name>Wesley Crusher</name>
      <age>27</age>
    </employee>
  </employees>
</empinfo>
```

#### JSON

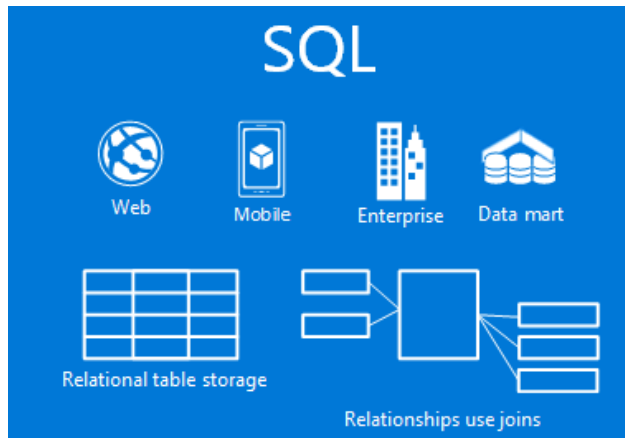
```
{ "empinfo" :
  {
    "employees" : [
      {
        "name" : "James Kirk",
        "age" : 40,
      },
      {
        "name" : "Jean-Luc Picard",
        "age" : 45,
      },
      {
        "name" : "Wesley Crusher",
        "age" : 27,
      }
    ]
  }
}
```

### Graphs

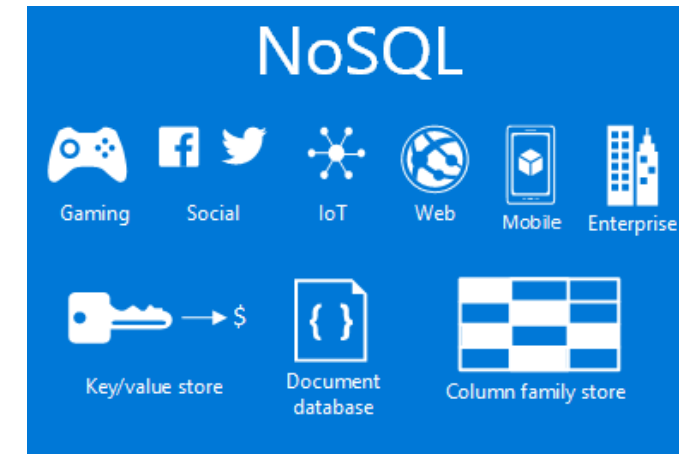




# PART 1: Database



VS



## Relational database management system (RDBMS)

RDBMS allows users to create and maintain a relational databases.

- Oracle, Microsoft Access, MySQL etc.

## Structured Query Language (SQL)

- A data query must be written in the language the database management system understands. SQL is a language RDBMS can understand.
- Used to perform create, read, update and delete operations
- Used to define tables and structures

## Non-Relational database management system

NRDBMS allows users to create and maintain a non-relational databases.

- MongoDB, DynamoDB, Apache Cassandra, etc.

## Implementation

- No language standard
- Most NRDBMS implement their own language for data operations and administrative on the database