An Introduction to SQL with R

Using databases is a fundamental part of a data scientist's role. The main focus of this training course is to introduce SQL databases, write your first SQL queries, and show how R can be used to retrieve and manipulate data stored in a relational database. The course uses both the {DBI} and {dbplyr} packages. We use the PostgreSQL database as an example for public courses. For in-house training, we are happy to adapt the course to match your database requirements.

Course Outline

- **Introduction to databases**: An introduction to relational databases that implement the SQL standard. This will cover standard SQL table queries, as well as a brief discussion into indexing.
- **Data entry and retrieval**: Using R as a means to query and modify data in a SQL database.
- **Standard SQL commands**: Typical SQL commands when working with a database

- **Data aggregation**: A {dplyr} and {dbplyr} front end to data manipulation on a database.
- **Multiple tables**: Dealing with and joining data that resides in multiple tables within a database.

Learning Outcomes

Session 1:

By the end of session 1 participants will…

- understand the concepts of relational database management.
- be introduced to the PostgreSQL dialect.
- understand how to form a connection using {DBI}.
- have learned how to run basic SQL commands from R:

  - extracting data with `SELECT` statements
  - filtering and organising data
  - creating tables and inserting data

Session 2:

By the end of session 2 participants will…

- understand how to access a database using {dplyr} and {dbplyr}.
- have learned how to run {dplyr} commands within the database.
- understand how to join tables by matching variables.

This course does not include:

- A thorough introduction to {dplyr}, see our Data Wrangling in the Tidyverse course for this.
- Database services by cloud providers like AWS and Azure, see our Intro to SQL course for an introduction.

- Connecting to databases through other programming languages like Python, see our Intro to SQL with Python course for this.

Attendee Feedback

- "Great insight into SQL databases in R. Content delivery was excellent and the knowledge acquired will be very useful in my job."