

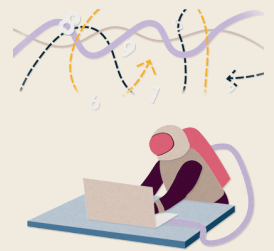
Introduction to SQL with Python

Level: Intermediate

Duration: 6 hours

Using databases is a fundamental part of a data scientist's role. This training course introduces SQL databases and the SQL command syntax, and shows how Python can be used to retrieve and manipulate data held in a relational database. The course also discusses how SQLAlchemy can be used to define and interact with databases using object-oriented Python code.

We use a PostgreSQL database as an example, and communicate with this using a `psycopg2` connection.



Course Outline

- **Introduction to databases:** An introduction to relational databases that implement the SQL standard.
- **Data entry and retrieval:** Using Python as a means to query and modify data in a SQL database.
- **Standard SQL commands:** Typical SQL commands when working with a database.
- **Pandas:** Using Pandas to load database contents into DataFrame objects and vice versa.
- **Multiple tables:** Dealing with and joining data that resides in multiple tables within a database.
- **Object-oriented programming:** Using SQLAlchemy to define and interact with databases using object-oriented code.

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 psycopg2.
- have learned how to run basic SQL commands:
 - extracting data with SELECT statements
 - filtering and organising data
 - creating tables and inserting data
- be able to use parameterised queries to insert Python data.

Session 2:

By the end of session 2 participants will...

- be able to convert between SQL data and Pandas DataFrame formats.
- have learned how to join tables by matching variables.
- understand object-oriented database management with SQLAlchemy:
 - defining database tables using Python classes
 - inserting rows using class instances
 - constructing queries by chaining methods

This course does not include:

- A thorough introduction to Pandas, see our [Intro to Python](#) 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 R, see our [Intro to SQL with R](#) course for this.

Prior Knowledge

No knowledge of database software is assumed, however familiarity with Python programming and Pandas DataFrames is required. Successful completion of the [Introduction to Python](#) course offered by Jumping Rivers is sufficient background. Basic knowledge of for loops and object-oriented programming in Python would also be useful, but not essential.

Attendee Feedback

- "Myles as an instructor is knowledgeable with good demo and time management."

Contact

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