Exercise 1.6: Connecting to Databases in Python

Learning Goals

- Create a MySQL database for your Recipe app

Reflection Questions

1. **What are databases and what are the advantages of using them?**
   Databases are organized collections of data. Databases have various advantages:
   - They keep data in a standardized format so you can store and access it more easily.
   - They keep data secure by controlling user access (through password access).
   - They can be accessed using applications with different languages and frameworks.

2. **List 3 data types that can be used in MySQL and describe them briefly:**

Data type	Definition
INT	Numeric data type. A standard integer.
VARCHAR	String data type. A variable-length non-binary string.
DATE	Date data type. A date value in CCYY-MM-DD format.

3. **In what situations would SQLite be a better choice than MySQL?**
   SQL lite would be a better choice than MySQL for:
   - Embedded applications: applications that need portability and don't require future expansion (e.g. single-user local applications, mobile applications, or games). A SQLite database is stored in a single file which can be stored anywhere in a directory hierarchy, and can be shared via removable media or transfer protocol.
   - Disk access replacement: applications that need to read and write files to disk directly. SQLite is simple.
   - Testing: SQLite has an in-memory mode which can be used to run tests quickly without the overhead of actual database operations. SQLite doesn't run as a server process, which means that it never needs to be stopped, started, or restarted and doesn't come with any configuration files that need to be managed.

4. **Think back to what you learned in the Immersion course. What do you think about the differences between JavaScript and Python as programming languages?**
   Python is a general-purpose programming language. It's concise and easy to read.

Python it's frequently used in scientific and specialized applications, including data science, scientific computing, machine learning, computer vision, image processing, and more. It has many third-party Python libraries that extend the language's functionality.
Python is used for back-end development.

JavaScript can be used to develop both the back-end and the front-end of an application. Many front-end development frameworks written in JavaScript allow developers to create complete applications that run in the browser, including React, Vue.js, and AngularJS.
JavaScript is also used in mobile development to create apps that run on both Android phones and iPhones. React Native is a JavaScript library that gives developers the ability to use HTML, CSS, and JavaScript for mobile application projects.
JavaScript is versatile; it gives developers the tools they need to develop the components of a web application.

5. **Now that you're nearly at the end of Achievement 1, consider what you know about Python so far. What would you say are the limitations of Python as a programming language?**
   Python is slower than other programming languages like C and Java because it's executed by an interpreter instead of a compiler.
   Python is not optimized to reduce memory. Since Python applications consume a lot of memory and CPU time, Python is not recommended for mobile computing.
   Python is a dynamically typed programming language. Since variables are not defined explicitly, a number of critical bugs, including syntax errors, can emerge at runtime. Runtime errors are harder to avoid which requires additional testing.