

Python - SQL Introduction with SQLite

What is a Relational Database

- ACID = Atomicity, Consistency, Isolation and Durability
 - Atomicity - all commands are a single unit (Succeed or Fail)
 - Consistency - changes are implemented across system
 - Isolation - each transaction is isolated from other transactions
 - Durability - once change is created it persists
- Schema
- Table Joins

RDBMS

Relational Database Management Systems

- MySQL
- MariaDB
- Postgress
- MSSQL
- SQLite

Install SQLite3

- Should be installed on any system with Python3 installed.
- <https://www.sqlite.org/>

SQLite3 Commands

- sqlite3
- .header on
- .mode column
- .schema TABLENAME
- No ';' as delimiter

Delimiter ;

- ; ends a SQL Statement

Create a Database

- sqlite3
 - Creates a TEMPORARY database
- sqlite3 DATABASE
 - Either connects to database or creates one

Create Tables

Data Types???

- Primary Key?
 - rowid is automatically created and auto increments
- create table student(name, age, size);
- create table student(name text, age int, size text);
- create table(name text, age int, size text) strict;

Insert Data

- insert into table(column1, column2) values(VALUE, VALUE2);

Select Data

- select * from table;
- select column1, column3 from table;
- select rowid, column1, column2, column3 from table;
- order by column
 - order by column desc

Where Filter

- where column like '%VALUE%'
- where column > VALUE;
- where column = 'VALUE';
- where column > VALUE and column2 like '%VALUE%';

Update

- update table set column1 = VALUE where column2 = VALUE

Delete

- delete from table where column1 = 'VALUE';
- DON'T MESS UP!!!
- Use ROWID to make sure you only delete specific record

JOINS

- select * from table1 left outer join table2 on table1.column = table2.column;
- select table1.column, table1.column2, table2.column from left outer join table2 on table1.column = table2.column;

Python and SQLite3

- Create Table and Insert Record = sqlite-insert.py
- Select from Table = sqlite-select.py
- Make sure to commit changes on insert
- Make sure to close connection when finished
- Use ? values to prevent SQL Injection Attacks
- ChatGPT is your friend!

Labs

- lab-insert.py
 - This lab has you insert records into a database from the command line
- lab-search.py
 - This lab allows you to search records from a database in the command line
- lab-note.py
 - This lab has you create a note taking app that allows you to add and search a note database
