CMPSC 312
Database Systems
Spring 2022

Lab 5 Assignment:
Coding Abstraction for Interaction with SQlite
Submit deliverables through your assignment GitHib repository.
Place the Python code in `src/`, and the report in the `writing` directories.

Objectives

To gain experience in writing Python code to interact with the `sqlite` library to automate SQL database management. To write a code in Python for a menu-driven database management system (DBMS) that will facilitate a user's interaction with a local SQL database.

GitHub Starter Link

https://classroom.github.com/a/T2vgI3pT

To use this link, please follow the steps below.

- Click on the link and accept the assignment
- Once the importing task has completed, click on the created assignment link which will take you to your newly created GitHub repository for this lab,
- Clone this repository (bearing your name) and work locally
- As you are working on your lab, you are to commit and push regularly. The commands are the following.
  - `git add -A`
  - `git commit -m ''Your notes about commit here''`
  - `git push`

HANDED OUT: 18^{th} APRIL 2022

Introduction

The term, *abstraction* is commonly used in computer science to describe the simplicity created by a program that does something very complicated. This simplicity may result from a software that is able automate complicated tasks by automatically writing and inputting robust instructions for users to accomplish tasks quickly, and with little effort on their part. Such software is commonly used in computer science to allow users to interact with large databases without having to know how to write SQL code.

When working with databases, it is common to see abstraction in areas of; insertion, updating, deleting and retrieving information. To simplify their work with a database, users instead interface with user-friendly menu-driven software that handles the technical work. Unknown to the user, all the commands that are received by the software are translated into the language of the database.

In this lab, you will write code to create a simple menu-driven DBMS in Python. To help get you started with working with menu systems in Python, some demo code is provided with this assignment. The tasks of your DBMS are listed below.

Tasks

- Create a database in python having any number of tables required by the user. Each of the tables is to be created according to the attribute information provided by user input.
- The database management system is to be controlled entirely by menus and there should be no SQL programming necessary on the part of the user – your code is to handle all tasks with the database.
- Your Python program is to handle the following main functions of the database.
    1. *Table creation*,
    2. *Table population*,
    3. *Queries*,
    4. Any form of *Table modification* (i.e,. renaming tables, dropping tables, changing an entry in a table). Note this effort may require research using online search engines.
- You are given some freedom in how you would like to implement your system, however, you must write clear and meaningful documentation to introduce your work, along with providing some screen shots of your work in your report file.

1 Summary of the Required Deliverables

1. This is an open-ended lab and you are free to choose how to address the coding goals which are written in blue.
2. File `src/myDBMS.py`: a program to bulid and allow a user to interact with your database by using menus.

3. File `writing/report.md`: A markdown file containing an introduction to your database, a description of how your code works, some copy-and-pasted output from the running the code and some screenshots.

In adherence to the Honor Code, students should complete this assignment on an individual basis. While it is appropriate for students in this class to have high-level conversations about the assignment, it is necessary to distinguish carefully between the student who discusses the principles underlying a problem with others and the student who produces assignments that are identical to, or merely variations on, someone else's work. Deliverables that are nearly identical to the work of others will be taken as evidence of violating Allegheny College's Honor Code.