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CS 457
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PA2 Design Document

Program's purpose

The goal of this program is to expand on the creation in PA1 of a SQL-like database written in Python. In the previous assignment, basic commands such as creating or deleting databases and tables, along with querying and modifying tables were implemented. In this updated version, changes have been made so that table contents can be updated and queried more effectively.

How the program stores tuples in the tables

The program uses text file tables and as each line represents a tuple, creating, modifying, or deleting tuples is straightforward. Although in more complex projects, it may be more efficient to read files in, store their values in a Table class, and write them later, the current string and list-based modification approach is still sufficient.

At a high level, how you implement those required functionalities

The list-parsing method used in PA1 was helpful so therefore, it has been retained for this assignment too. For commands such as "select" where the number of variables may vary, parsing has been adjusted by removing both the beginning and end of the variable list based on known delimiters such as "select" and "from." The work begins only when all the required information is gathered from the command. Most of the functions in this project follow a similar process, where the necessary information is located in the table as list indexes and modified accordingly.
Inserting a tuple is the easiest of all functions in this project, as the data is formatted and appended to the end of the table text file once the command is parsed.
Deleting a tuple requires a loop to iterate through each line in the file, searching for the named criteria, and removing all data from that index in the temporary list if a match is found. The modified list is then written back to an empty file since data cannot be modified in the middle of the file.
Modifying a tuple is similar to deletion, but instead of setting the list index to None, the relevant data is located and updated.
Querying specific data requires extra work due to the variability of commands. Once all relevant indexes are found, the list is searched for the right fields, and a temporary list is created that stores each tuple as a string element and this temporary list is then printed.

Additionally, the column titles' order is irrelevant in the select command. For example, if a table is set up as pid | name | price, and the user selects name, pid, the output will still retain the correct table ordering.

Execution Commands
Run the command “python3 main.py”
Python 3.7 or newer

*The PA2_test.sql file was modified by removing multi line commands. However, they are still the same commands.