

Programming Assignment #2

Design Documentation

Organization

My program stores “tuples” as lines of text in “tables,” or text files. I coded it in python and used the OS module to manage my databases and tables. I have a root folder called “pa2.” Each new database is created as a directory inside that folder. Then, each new table is created as a text file inside those directories.

Functionality

The program continuously reads user input from the command line until the user inputs `.EXIT`. I also made the program case insensitive.

If the user input contains `INSERT INTO`, the program turns the inserted values into a string, where each value is separated by “|”, then appends that string to the given table/text file.

If the user input contains `DELETE FROM`, the program parses the command to get the table name and the three variables of the “where” statement (e.g. `price > 150`). It reads just the first line of the file (the header) and gets the index of the specified column (e.g. `price`). It then goes through the rest of the file and checks if the inequality (e.g. `> 150`) at that index is true, and if so, replaces the row with an empty string. Then, the contents of the file are deleted and replaced with a string containing the header and each non-empty row.

If the user input contains `UPDATE`, the functionality is very similar to deletion, except for the addition of “set” variables (e.g. `set name = 'Gizmo'`). Now, the program finds column indices for both the where and set variables, and then for each row, if the condition is met, performs a simple re-assignment at those indices. Again, the contents of the file are deleted and replaced with a string of the new content.

If the user input contains `SELECT`, the program gets a list of the variables in between the words “select” and “from”. It also checks if there is any “where” statement and gets those values. If the user does not enter *, the program finds the indices of each item in the list of attributes. It creates a string containing only the header names and column values at those indices -- or if there is a where statement, only those that meet that condition -- and then prints that string to the screen. It does not rewrite the file since it's only performing selection.

Execution

Run “`python3 main.py < PA2_test.sql`” inside the folder “pa2”.