

Programming Assignment #3

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 “pa3.” 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

I only made changes to my `SELECT` clause and added a few functions. My program keeps track of whether the join is an inner or outer join using Boolean variables (“inner” and “outer”) that it will turn on/off based on the user input. These dictate the rest of the flow of the program.

If multiple tables are given in the user input, then my program checks which type of join to perform and calls the appropriate function. First, a function `match()` is called to join each table (e.g. Employee E) to its attribute (e.g. E.id).

Then, a function `getColIndex()` is called to find the indices of those attributes in each table. Then, the table and the indices of the specified columns are passed to the appropriate join function.

The `innerJoin()` function uses nested for loops to check if each row in table A has a match in table B; if so, it appends it to a string representing the joined table. The `outerJoin()` function does basically the same thing, but it counts the number of matches each row in table A has; if it has no matches, it still appends it to the joined table.

Execution

Run “`python3 main.py < PA3_test.sql`” inside the folder “pa3”.