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CS 457

Programming Assignment 3

## Project 3 Design Document

### Summary

- This design paper will discuss how the program implements different joins to correctly print out the required text by reading the SQL file. It will discuss exactly which aspects of the program changed from the previous projects and which aspects were added in.

### At a very high level, how were the different joins implemented?

- It is obvious with this project that the given SQL file is different in terms of how the queries are laid out. For instance, many of the queries are broken up by newlines in this project. Thus, I had to change my method for parsing through the newlines. When the program read through the join parts, it looked for the “from” keyword. For the very first join, it had no other discerning keywords. So, the program just called the whereStuff function when it detected the “from” keyword. The next join functionality is basically the same functionality as the first one. However, it has the extra keyword “inner join”. So, the program will go through the SQL file once more and search which line as the keyword “inner join”. When it finds that line, the program will once again call the whereStuff function to print the correct output to the terminal. However, the third and the last join functionality is different. This time, it must print out the previous output, but also print another line which is the ID that only exists in the employee file. This specific join functionality also had the “outer join” keyword in it.
- In this case, the implementation of the functionality requires a different code than previously. I had two choices to implement this. I could have made a new function that is made just for the last join functionality, or I could have just added onto the previously existing function.
- I made a choice to just add onto the existing function, which is the whereStuff function. I had to pass in an additional bool argument when I called this whereStuff function. This bool argument will determine if the line that was read had the “outer join” keyword inside of it. This is what allowed the program to differentiate between lines that had no other keyword, lines that had the “inner join” keyword, and lines that had the “outer join” keyword. So obviously, when the “outer join” keyword was detected, the whereStuff function will be called with “True” as one of its arguments. This will trigger the logic inside of the whereStuff function, which will now print out the correct output.

### **How to compile and execute my code?**

- My program is very similar to my previous projects. It will first take in the SQL file as part of the command line argument. Then, it will read through the SQL file, parse through it to find certain keywords, and call the functions related to those keywords. In this case, my selectTable and whereStuff plays a crucial role when it came to printing out the correct outputs. With the selectTable, it allowed the Employee and Sale files to have the correct directory paths. Then with these path values, they were used in the whereStuff function. In the whereStuff function, the program read the values inside of the Employee and Sale files. The read values were then parsed out for their ID values. By comparing these ID values, the program manages to execute the join functionalities and output the correct values to the terminal.
- Overall, this project functioned very closely to my previous projects, but the functionality for the selectTable and whereStuff functions were changed to fit the certain queries in the SQL file.