COMP 4522 - Database II: Advanced Database

Assignment I

Design Choices and Starting Code Adjustments

Most of this project was done on-the-fly, however the general step of processing, committing, rolling back, and restoring were implemented. There have been some adjustments made to the main in order to fit parameters of commits and set the global scope of *data_base*. The main change to the starting code was the introduction of "*global data_base*" in main to allow transaction_processing and recovery_script, as well as a boolean commit variable, as the "*while not failure*" resulted in an infinite loop and required modifications to allow the termination of the program in the event of all transactions succeeding (no failures).

Transaction_processing is given the index from main. This keeps track of the main loop iteration and handles the appropriate transaction, while maintaining rollback capabilities in the event of a failure after the function returns to main. The function first identifies which index in a database row the attribute is located, then traverses through the database to match unique_ID, the primary key. Then the function applies the changes to the database and appends the log translation to the DB_Log. Each element in the DB_Log list has the following data structure.

logDS = [unique_id, attribute, (valueBefore, valueAfter)]

This data structure maintains a primary key, the attribute, and the attribute's before and after image. DB_Log is maintained in sequential order of transactions, thus treated like a stack when rolling back the last transaction (accessed when failed). Recovery_script follows the same pattern in reverse, with the exception of having the DB_Log instead of the transaction table.

Libraries, Bugs, and Missing Features

Import csv introduces a library for outputting a .csv file, in an attempt to return a file with an updated database table. Currently, Employees_UPDATE.csv is the file we're changing and is first rewritten at the beginning of the program to restore original contents from Employees_DV_ADV.csv and then any and all commits are applied with each non-failure.

No known bugs, however there are sure as hell some considering how much of a hack job this assignment was. Also, Log System is not maintained in storage, nor are the status of the transactions.

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