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CS 457

Project 2

Design for PA2

How to Compile:

1) Make
2) ./database

Storing Tuples:

The tuples for the table are stored in a 2-D vector called the databaseVector. Each tuple has its own vector to store all of its data and attributes. For example, databaseVector[0] is the first row for the first tuple and so on. Then, databaseVector[0][0] is used for the first attribute that is a part of the tuple, for example the name or the price. This 2-D databaseVector is part of a class so that I can use it as a datatype for each of the tables. Meaning that each table has its own 2-D vector data type that can be filled with data. Within each row of the table Product, we have that pid, name and price. By creating this 2-D vector, it is easy to complete data manipulations such as insert, delete, select, and modify.

Operations:

Insert:

Insertion works by first parsing the command and understanding what tuple is being inserted into the table. Once that is completed, I store the tuple into a temporary vector. That temporary vector is then used to be inserted into the next available row of the table. Afterwards, the tuple that was inserted has control over the entire row.

Delete:

Delete works by parsing through the command to understand what property we are looking for and how it is being compared. For example deleting all tuples with a specific name. There are three different comparisons that can be completed, equals, greater than, and less than. With these three comparisons we can delete one or more tuples at a time. I take that information

gathered from the query and look through each row and column of table trying to find a column that is matched. Once a column with the desired properties is found, the entire tuple/row is deleted from the table.

Modification:

Modification works by first parsing the command to figure out the table name, and which attribute of a tuple is being changed and what that value is. Afterwards, I go through each row and each column to find the desired attribute. Once found I replace the value of the attribute with the new value. Since the table is a 2-D vector, it is simple to go through each vector and find the specific attribute that needs to be changed. Multiple tuples can be altered with one modification query.

Select:

Select works by parsing through the command to understand the desired table and which attributes need to be printed out. The desired attributes are placed in a vector that will be read by the database class to understand exactly which attributes are desired for print out. All this data is read by a specific function for printing so that it understands which tuples to print out and what attributes of those tuples to print.