

Javier Perez

CS 457

Project 1

## Design Document

### Multiple Database Organization:

My program organizes multiple databases by maintaining a dictionary variable, databases, within the database manager class. This dictionary contains keys defined as the database name and the values being the respective database object defined in the database class. The databases themselves are associated with a directory within the current working directory and their paths are saved within the database object itself.

Furthermore, to keep track of which database is currently being used by the user, a function, set\_curr\_db (set current database), is called whenever the user inputs the command "USE database\_name;". This function then uses the database dictionary to assign the variable, curr\_db (current database), the database name's respective database object. This variable is then used as the main method for accessing and altering the users desired database.

### Multiples Tables Organization:

My program manages multiple tables by maintaining a dictionary variable in the database that the table is created in. This variable, tables, contains the table name as the key and an instance of a Table object as the value. The tables themselves are associated with a file in the database directory and uses the databases path variable to ensure changes are directed to the proper table.

As the table name must be defined each time a command seeks to update it, the database simply takes the table name as an additional parameter in order to reference the desired table within its dictionary of Tables.

### High-Level Descriptions:

#### CREATE:

The create functionality is implemented using various checks to ensure the file does not currently exist, then takes the commands defined name for the table or database and creates an entry within the respective dictionary with the object initialization assigned to that entry. It then issues a command to the OS to create a directory or file within the current working directory and applies a path to that command if necessary.

#### DROP:

The create functionality is implemented using various checks to ensure the file exists and is empty. In the case of deleting a database, the drop function will simply issue an error if it does not exist or if there are tables in the database, however if it exists and is empty then the database manager will delete its entry for that database and then issue an OS command to delete its

directory. For tables however, the drop function only needs to check if it exists, and if it does then it will delete the table entry in the database dictionary, then issue an OS command to delete the file associated with the table.

#### ALTER:

The alter functionality is implemented by taking the proposed changes to the table and appending those changes to the end of its current attributes.

#### SELECT:

The select/query functionality is implemented by processing the commands desired tables selection, accessing that tables path and file contents, and then iterating through the appropriate attributes by row and then printing those attributes values and types by column.