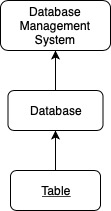
CS 457: Database Management Systems

Project #1: Metadata Management

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**Overview**

My database management system is structured such that the operation can be implemented on three different levels of abstraction: the database management system (DBMS), the database, and the table.

**Database Management System**

The DBMS manages the databases and how they are created, accessed, and stored. Each database is stored in a map structure keyed by it’s name. To use and manipulate the databases an SQLite parser is implemented partially on each level of the program. In the DBMS the parser creates a queue of queries, which each take the form of a tuple = {COMMAND, string} representing the high level SQL command and rest of the statement to be parsed at lower levels. Using this system, databases can be created, loaded, and destroyed while more specific operations are sent to lower levels. All of this functionality can be accessed via the DBMS shell.

**Database**

The database manages how each database creates, deletes, prints, and alters tables. This is done by taking the remaining query string and further parsing it to find the table name and relevant data for each operation. Each table is stored as a map of tables keyed with their names and using template attributes. The attributes are decided by the query data during the create statement and are initialized implicitly during runtime. When altered, each tuple is concatenated with the new attribute, removing the need to create a new table.

**Tables**

The table stores the low level data as a vector of tuples of template type. The types of each variable as well as the names are stored in a map for future processing needs. This class is intended to implement all low level printing operations as well as the fundamental relational algebra operations.