

Design Document

This program was implemented in Python 3.7.4. To run this program, invoke `main.py` and type the SQL statements into the terminal. Example:

- `python main.py`

This program expands upon the third assignment and implements a basic transaction system. The transaction locking system is implemented by creating a new empty file for each table currently in use by a process. If another process tries to write to a table that has an associated empty lock file, it will be denied. A process knows it can write to a table if it was the one that created the empty lock file; this is kept track of in memory by the process. When a transaction is complete, or the process exits via the `.exit` command, all locks are released (the empty lock files are deleted).

A transaction can be started by entering a `'begin transaction;'` statement. All subsequent transactions are held in a queue, until a `'commit;'` statement is found. Each transaction is analyzed to determine which tables need to be locked as they are processed. Once the `'commit;'` statement is executed, the queued transactions are executed in sequence, and then all tables locked by this process are unlocked.