

DB Class Notes

Followup for CSC330 Database Theory & Applications Spring 2022

"Be the shell!": in-class assignment

See also screencase video on YouTube (12 min).

1. Start SQLite with header on and column mode switched on from the command line (to find out, look at `sqlite3 --help`).

Solution: On the command line¹, enter

```
$ sqlite3 -header -column~
```

2. Check that you don't have a persistent database with `.database`.

Solution:

```
sqlite> .database
```

3. Open your (existing) database `sqlite.db` with `.open`

Solution:

```
sqlite> .open sqlite.db
```

This database does not need to exist yet - if it does not, the binary file is created as an empty file in the directory where you were when you opened SQLite.

4. Check that you're now writing to `sqlite.db`

Solution:

```
sqlite> .database
```

You could also enter `.show` - the last line of its output shows the currently active database. You can change databases and have as many open as you like.

5. Check that in fact header is ON and the mode is column

- with `.show` to show all output values
- with `SELECT`

Solution:

```
sqlite> .show
sqlite> SELECT * FROM customer;
```

This presumes that you have created at least one table named `customer`, and that it is in your database `sqlite.db`, and that the table has at least one row - otherwise nothing will be displayed.

6. Switch the output to a file with `.output sqlite.sql`

Solution:

```
sqlite> .output sqlite.sql
```

`.output` is one of the settings you saw with `.show`. It shows where the output is directed. The default is `stdout`, or the screen. You have now reset this to pipe all output into a file `sqlite.sql`.

7. Dump the content of your database with `.dump`

Solution:

```
sqlite> .dump
```

This writes a version of the binary `.db` file to a text file `.sql`. It contains all the information necessary to recreate the database. This `.sql` can be used to port the database. On another computer, SQLite will recreate `sqlite.db` from `sqlite.sql` by importing it with the `.read` command.

8. Switch the output back to `stdout`

Solution:

```
sqlite> .output stdout  
sqlite> .show
```

Until we redirect the output to `stdout`, every output we generate, including error messages, will be redirected to the `.sql` file.

9. Dump the content of your database again.

Solution:

```
sqlite> .dump
```

Instead of dumping to an SQL file, we are now dumping the database to the screen.

10. Leave the SQLite shell and look at `sqlite.sql`

Solution:

```
sqlite> .q
```

Depending on your PC (it doesn't seem to work under MacOS), the `.shell` command can be used to peek beyond the SQLite shell, and you could use this command to look at the directory listing - under Windows: `.shell DIR`.

```
PRAGMA foreign_keys=OFF;
BEGIN TRANSACTION;
CREATE TABLE customer (id INT, name TEXT);
INSERT INTO customer VALUES(1,'Jimmy Jones');
INSERT INTO customer VALUES(2,'Jane Jackson');
INSERT INTO customer VALUES(3,'Arabela Ant');
INSERT INTO customer VALUES(4,'Peter Piper');
INSERT INTO customer VALUES(4,'Peter Piper');
CREATE TABLE customer1 (id INT, name TEXT);
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
INSERT INTO customer1 VALUES(1,'Norbert North');
COMMIT;
```

```
1 -(Unix)**-  sqlite.sql  All (16,48)  (SQL[ANSI])
```

Figure 1: sqlite.sql with the sqlite.db database dump

Footnotes:

¹ Org-mode has 11 different header arguments ([see here](#)) - you can initialize SQLite with the header shown below. A separate session buffer is not supported² - SQLite is run outside of Emacs and the results are displayed here. For a session demonstrating SQLite commands (which begin with a .), Org-mode is not well suited. For SQL commands, it is well suited.

```
#+begin_src sqlite :db ./sqlite/sqlite.db :header :column :results output
...
#+end_src
```

² Such a session buffer opens e.g. when you start R with M-x R.

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