SQLite CLI

Shell for SQLite

START HERE

`sqlite3 <file.db>`
Open or create a database

`.headers on`
Show column names

`.tables`
List tables

`.import --csv <file> <table>`
Load a CSV

`.schema <table>`
Show CREATE statements

`.backup <file>`
Binary copy of the database

`.mode box`
Readable table output

`.quit`
Leave the shell

Input file, SQL arg, stdin → `-cmd` `-init` → **Shell** dot-commands + SQL → `.mode` `.headers` → **Formatter** box, csv, json... → `.once` `.output` → **Output** stdout, file or pipe

CONCEPTS

Dot-commands are shell commands, not SQL: they sit alone on one line, need no semicolon and cannot be used from a library. SQL statements need a closing ;.

Without a filename (or with :memory:) you get a temporary database that vanishes on exit. Use .save <file> to keep it.

Pass SQL as a second argument for scripting: sqlite3 -csv app.db "select ..." prints and exits.

OPEN AND RUN

`sqlite3 <file.db>`
Open (or create) a database

`sqlite3 <file.db> "<sql>"`
Run one statement and exit

`sqlite3 <file.db> < <script.sql>`
Run a SQL script

`.read <script.sql>`
Run a script from inside the shell

`.open <file.db>`
Switch to another database file
--new wipes an existing file without asking

`sqlite3 -readonly <file.db>`
Open without write access

`.help`
List all dot-commands

`.quit`
Exit the shell

`.shell <cmd>`
Run a shell command

`.cd <dir>`
Change working directory

`sqlite3 -bail -batch <file.db>`
Stop at the first error

`sqlite3 -safe <file.db>`
Disable file access and shell escapes
Not a full sandbox

`sqlite3 -init <file>`
Run a startup script first

`.timeout <ms>`
Wait for a locked database

OUTPUT MODES

`.mode box`
Unicode box table

`.mode column`
Aligned plain columns

`.mode table`
ASCII table

`.mode markdown`
Markdown table

`.mode csv`
Comma separated values

`.mode json`
JSON array of objects

`.mode line`
One column per line

`.mode list`
Default pipe-separated

`.mode tabs`
Tab separated values
Does not re-import cleanly if values hold double quotes

`.mode insert <table>`
Rows as INSERT statements

`.mode quote`
SQL-quoted values

`.headers on`
Print column names

`.nullvalue <text>`
Show NULL as text

`.separator <col> <row>`
Set delimiters

`.width <n> <n>`
Fixed column widths

`.show`
Show current settings

INSPECT SCHEMA

`.tables`
List tables and views

`.tables <pattern>`
Filter with a LIKE pattern

`.schema`
All CREATE statements

`.schema <table>`
CREATE statements for one table

`.schema --indent`
Pretty-printed schema

`.indexes <table>`
List indexes

`.databases`
Attached databases and files

INSPECT SCHEMA (cont.)

`.dbinfo`
Page size, counts, schema cookie

`.fullschema`
Schema plus sqlite_stat data
Statistics may expose sampled data values

`.lint fkey-indexes`
Foreign keys lacking an index

`.expert`
Suggest indexes for next query
Experimental

`pragma table_info(<table>);`
Columns and types

IMPORT AND EXPORT

`.import --csv <file> <table>`
Load CSV into a table
A missing table is created from the header row

`.import --csv --skip 1 <file> <table>`
Load into an existing table
Without --skip the header becomes a data row

`.once <file>`
Send next result to a file

`.output <file>`
Send all results to a file

`.output`
Back to stdout

`.once | <cmd>`
Pipe next result to a command

`.once -x`
Open next result in a spreadsheet

`select readfile('<path>');`
Read a file as a value

`select writefile('<path>', <blob>);`
Write a value to a file

BACKUP AND RECOVER

`.backup <file>`
Binary copy of main database
Overwrites an existing file silently

`.restore <file>`
Load a backup into this database

`.save <file>`
Write database to a file

BACKUP AND RECOVER (cont.)

`.dump`
Whole database as SQL text

`.dump <table>`
One table as SQL text

`sqlite3 <old.db> .dump | sqlite3 <new.db>`
Rebuild into a fresh file

`.recover`
Salvage data from a corrupt file
Orphaned rows land in lost_and_found

`.clone <newdb>`
Copy content into a new file

`.sha3sum`
Hash of database content

`pragma integrity_check;`
Check for corruption

DEBUG AND TUNE

`.timer on`
Time each statement

`.eqp on`
Show query plan automatically

`explain query plan <sql>;`
Plan for one statement

`.stats on`
Memory and I/O statistics

`.changes on`
Report rows changed

RECIPES

CSV into a new database

```
sqlite3 app.db
# inside the shell:
.import --csv people.csv people
.schema people
select count(*) from people;
```

Export a query to CSV

```
sqlite3 -header -csv app.db
"select * from people" >
people.csv
# or inside the shell:
.headers on
.mode csv
.once people.csv
select * from people;
```

Safe live backup

```
sqlite3 app.db ".backup
'snap.db'"
sqlite3 snap.db "pragma
integrity_check;"
```

Quick look at an unknown database

```
.tables
.mode box
.headers on
.schema --indent
select * from <table> limit 5;
```