Structured Query Language

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1 Management

1.1 Entering the SQL shell

```
alias sql="sqlite3 -header -box"
sql [database_file]
```

1.2 Quitting the shell

```
.quit
```

1.3 Managing databases

```
.open database_name
.save database_name
.clone new_database_name
```

1.4 Formatting output

```
.headers on|off
.mode list|column|html
.separator separator
.width [first_column_width [, ...]]
```

1.5 Database information

```
.tables
.schema [table_name|regex_expression]
.dump [table_name|regex_expression]
```

2 SQL Queries

2.1 Retrieve records

```
SELECT [MIN|AVG|MAX|COUNT|SUM(] [DISTINCT] oid|*|column_name[)] [AS temp_name] [, ...]
FROM table_name [AS temp_name] [, ...]
[JOIN table_name [AS temp_name] [ON condition|USING column_name]*
[WHERE condition]
[GROUP BY column_name [, ...]]
[HAVING condition]
[ORDER BY column_name [ASC|DESC] [, ...]]
[LIMIT number_of_row];
```

2.2 Managing tables

```
CREATE TABLE [IF NOT EXISTS] table_name
  (column_def [, ...]);
| AS (sql_statement);
```

```
ALTER TABLE [schema_name .] table_name
  RENAME TO new_table_name;
| RENAME [COLUMN] column_name TO new_column_name;
| ADD [COLUMN] column_def;
```

```
DROP TABLE [IF EXISTS] table_name;
```

```
VACUUM;
```

Undocumented yet : virtual tables, views, triggers, database attachments, index management

2.3 Managing records

```
INSERT INTO table_name (column_name [, ...])
VALUES (value [, ...]);
```

```
UPDATE table_name
SET column_name = value [, ...]
[WHERE condition];
```

```
DELETE FROM table_name
[WHERE condition];
```

3 Reference

3.1 Conditions

3.1.1 Boolean conditions

```
column_name ==|!=|<[=]|>[=] value
column_name [NOT] IN (sql_statement)|(value [, ...])
column_name [NOT] BETWEEN min_value AND max_value
column_name IS [NOT] NULL
column_name LIKE pattern
```

3.1.2 Pattern wildcards

— % matches any sequence of zero or more characters.
— _ matches any single character.

3.1.3 Conditions combination

```
AND|OR|NOT
```

3.2 Column definition

```
column_name [NULL|INTEGER|REAL|TEXT|BLOB] [UNIQUE] [NOT NULL] [DEFAULT value] [CHECK (condition)]
PRIMARY KEY (column_name [, ...])
FOREIGN KEY (column_name [, ...])
    [REFERENCES table_name (column_name [, ...])]
    [ON UPDATE|DELETE NO ACTION|SET DEFAULT|SET NULL|CASCADE]
```

3.3 Scalar functions

```
abs(X)
char(X1,X2,...,XN)
coalesce(X,Y,...)
length(X)
lower|upper(X)
min|max(X,Y,...)
replace(X,Y,Z)
round(X[,Y])
sign(X)
substring(X,Y,Z)
[r|l]trim(X[,Y])
typeof(X)
```

3.4 Math functions

```
[a](cos|sin|tan)[h](X)
floor|ceil|trunc(X)
radians|degrees(X)
exp(X)
ln|log[10|2](X)
log(B,X)
mod(X,Y)
pi()
pow(X,Y)
sqrt(X)
```