The SQL Data Frames Reference Manual

SQL queries for Data Frames, version 1.0.0

Steve Nunez <steve@symbolics.tech>

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Table of Contents

Copying

1 Systems

The main system appears first, followed by any subsystem dependency.

1.1 sqldf

A wrapper for SQLite allowing querying of Data Frames

Long Name
SQL queries for Data Frames

Author Steve Nunez <steve@symbolics.tech>

Home Page
http://lisp-stat.dev/docs/manuals/sqldf

Source Control
(GIT git://github.com/Lisp-Stat/sqldf)

Bug Tracker
https://github.com/Lisp-Stat/sqldf/issues

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Long Description
SQLDF is a library for querying data frames using SQL, optimised for convenience over memory consumption. It uses an in-memory data base for transparent queries.

Version 1.0.0

Dependencies

- sqlite (system).
- data-frame (system).
- select (system).

Source [sqldf.asd], page 5.

Child Components

- [pkgdcl.lisp], page 5 (file).
- [utils.lisp], page 5 (file).
- [sqldf.lisp], page 5 (file).

2 Files

Files are sorted by type and then listed depth-first from the systems components trees.

2.1 Lisp

2.1.1 sqldf/sqldf.asd

Source [sqldf.asd], page 5.

Parent Component
[sqldf], page 3 (system).

ASDF Systems
[sqldf], page 3.

2.1.2 sqldf/pkgdcl.lisp

Source [sqldf.asd], page 5.

Parent Component
[sqldf], page 3 (system).

Packages [sqldf], page 7.

2.1.3 sqldf/utils.lisp

Dependency
[pkgdcl.lisp], page 5 (file).

Source [sqldf.asd], page 5.

Parent Component
[sqldf], page 3 (system).

Internals

- [*downcase-symbols*], page 9 (special variable).
- [*escape-sql-names-p*], page 9 (special variable).
- [*sqlite-reserved-words*], page 9 (special variable).
- [execute-to-column], page 10 (function).
- [from-sql-name], page 10 (function).
- [sqlite-column-type], page 10 (function).
- [statement-column-type], page 10 (function).
- [to-sql-name], page 10 (function).

2.1.4 sqldf/sqldf.lisp

Dependency
[utils.lisp], page 5 (file).

Source [sqldf.asd], page 5.

Parent Component
[sqldf], page 3 (system).

Public Interface

- [read-table], page 9 (function).
- [sqldf], page 9 (function).
- [write-table], page 9 (function).

Internals [create-df-table], page 10 (function).

3 Packages

Packages are listed by definition order.

3.1 sqldf

SQLDF is a facility for querying data frames with SQL

Source [pkgdcl.lisp], page 5.

Use List common-lisp.

Public Interface

- [read-table], page 9 (function).
- [sqldf], page 9 (function).
- [write-table], page 9 (function).

Internals

- [*downcase-symbols*], page 9 (special variable).
- [*escape-sql-names-p*], page 9 (special variable).
- [*sqlite-reserved-words*], page 9 (special variable).
- [create-df-table], page 10 (function).
- [execute-to-column], page 10 (function).
- [from-sql-name], page 10 (function).
- [sqlite-column-type], page 10 (function).
- [statement-column-type], page 10 (function).
- [to-sql-name], page 10 (function).

4 Definitions

Definitions are sorted by export status, category, package, and then by lexicographic order.

4.1 Public Interface

4.1.1 Ordinary functions

`read-table` (*db table*) [Function]

Read TABLE and return a data frame with the contents. Keys are interned in a package with the same name as TABLE.

Package [`sqldf`], page 7.

Source [`sqldf.lisp`], page 5.

`sqldf` (*sql*) [Function]

Execute SQL (a string) on a data frame and return a new data frame with the results.

The data frame is identified by the word following FROM (case insensitive) in the SQL string. An in-memory SQLite database is creaetd, the contents of the data frame loaded, the query performed and a new DATA-FRAME returned with the results and the database deleted. In most cases, using this library is faster, from a developers time perspective, than writing the code to perform the same query. SQLDF has been tested with data frames of 350K rows with no slow-down noted. The R documentation for their version of SQLDF suggests that it could be faster than Lisp native queries. Note that the SQL query must use SQL style names for columns and not the Lisp versions, e.g. flight-time becomes flight_time.

Package [`sqldf`], page 7.

Source [`sqldf.lisp`], page 5.

`write-table` (*db table df*) [Function]

Write data-frame DF to TABLE on connection DB. :na symbols are converted to "NA" strings in the database.

Package [`sqldf`], page 7.

Source [`sqldf.lisp`], page 5.

4.2 Internals

4.2.1 Special variables

`*downcase-symbols*` [Special Variable]

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`*escape-sql-names-p*` [Special Variable]

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`*sqlite-reserved-words*` [Special Variable]

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

4.2.2 Ordinary functions

`create-df-table` (*db table df*) [Function]

Create a database table of NAME in DB according to the schema of DF. This function is to create a table for DF prior to loading. Lisp style symbol names are converted to SQL compatible names.

Package [`sqldf`], page 7.

Source [`sqldf.lisp`], page 5.

`execute-to-column` (*db sql* **&rest** *parameters*) [Function]

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`from-sql-name` (*str*) [Function]

Convert a string to a symbol, upcasing and replacing underscores with hyphens.

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`sqlite-column-type` (*sequence*) [Function]

Return a format string for the most general type found in sequence
Use this for sequences of type T to determine how to declare the column to SQLite.

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`statement-column-type` (*stmt column-number*) [Function]

Return the type string of a column of a query statement

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

`to-sql-name` () [Function]

Convert a symbol or string into a name that can be a sql table, column, or operation name. Add quotes when escape-p is true, or escape-p is :auto and the name contains reserved words. Quoted or delimited identifiers can be used by passing :literal as the value of escape-p. If escape-p is :literal, and the name is a string then the string is still escaped but the symbol or string is not downcased, regardless of the setting for *downcase-symbols* and the hyphen and forward slash characters are not replaced with underscores. Ignore-reserved-words is only used internally for column names which are allowed to be reserved words, but it is not recommended.

Package [`sqldf`], page 7.

Source [`utils.lisp`], page 5.

Appendix A Indexes

A.1 Concepts

(Index is nonexistent)

A.2 Functions

A.3 Variables

A.4 Data types