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## NAME

**sql** - execute a command on a database determined by a dburl

## SYNOPSIS

```
sql [options] dburl [commands]
sql [options] dburl < commandfile
#!/usr/bin/sql --shebang [options] dburl
```

## DESCRIPTION

GNU **sql** aims to give a simple, unified interface for accessing databases through all the different databases' command line clients. So far the focus has been on giving a common way to specify login information (protocol, username, password, hostname, and port number), size (database and table size), and running queries.

The database is addressed using a DBURL. If *commands* are left out you will get that database's interactive shell.

GNU **sql** is often used in combination with GNU **parallel**.

*dburl*

A DBURL has the following syntax: [sql:]*vendor://*  
[[*user*[:*password*]@][*host*[:*port*]][/*database*][?*sqlquery*]]

See the section DBURL below.

*commands*

The SQL commands to run. Each argument will have a newline appended.

Example: "SELECT \* FROM foo;" "SELECT \* FROM bar;"

If the arguments contain '\n' or '\x0a' this will be replaced with a newline:

Example: "SELECT \* FROM foo;\n SELECT \* FROM bar;"

If no commands are given SQL is read from the keyboard or STDIN.

Example: echo 'SELECT \* FROM foo;' | sql mysql:///

**--csv**

CSV output.

**--db-size**

**--dbsize**

Size of database. Show the size of the database on disk. For Oracle this requires access to read the table *dba\_data\_files* - the user *system* has that.

**--help**

**-h**

Print a summary of the options to GNU **sql** and exit.

**--html**

HTML output. Turn on HTML tabular output.

**--json**

**--pretty**

Pretty JSON output.

**--list-databases**

**--listdbs**

**--show-databases**

**--showdbs**

List the databases (table spaces) in the database.

**--listproc**

**--proclist**

**--show-processlist**

Show the list of running queries.

**--list-tables**

**--show-tables**

**--table-list**

List the tables in the database.

**--noheaders**

**--no-headers**

**-n**

Remove headers and footers and print only tuples. Bug in Oracle: it still prints number of rows found.

**-p pass-through**

The string following -p will be given to the database connection program as arguments. Multiple -p's will be joined with space. Example: pass '-U' and the user name to the program:

*-p "-U scott"* can also be written *-p -U -p scott*.

**--precision <rfc3339|h|m|s|ms|u|ns>**

Precision of timestamps.

Specifiy the format of the output timestamps: rfc3339, h, m, s, ms, u or ns.

**-r**

Try 3 times. Short version of **--retries 3**.

**--retries *ntimes***

Try *ntimes* times. If the client program returns with an error, retry the command. Default is **--retries 1**.

**--sep *string***

**-s *string***

Field separator. Use *string* as separator between columns.

**--skip-first-line**

Do not use the first line of input (used by GNU **sql** itself when called with **--shebang** ).

**--table-size**

**--tablesize**

Size of tables. Show the size of the tables in the database.

**--verbose**

**-v**

Print which command is sent.

**--version****-V**

Print the version GNU **sql** and exit.

**--shebang****-Y**

GNU **sql** can be called as a shebang (#!) command as the first line of a script. Like this:

```
#!/usr/bin/sql -Y mysql:///
```

```
SELECT * FROM foo;
```

For this to work **--shebang** or **-Y** must be set as the first option.

**DBURL**

A DBURL has the following syntax: [sql:]vendor://[[user][:password]@][[host][:port]/[database]]?sqlquery]

To quote special characters use %-encoding specified in <http://tools.ietf.org/html/rfc3986#section-2.1> (E.g. a password containing '/' would contain '%2F').

```
csv:///%2Ftmp%2Fparallel-bug-56096/mytable csv:///tmp/parallel-bug-56096/mytable
mysql://me@/me/ mysql:///
```

```
sqlite3:///%2Frun%2Fshm%2Fparallel.db sqlite3:///%2Frun%2Fshm%2Fparallel.db/table
sqlite:///%2Ftmp%2Ffile.sqlite?SELECT csv:///%2Ftmp%2Fparallel-CSV/OK
csv:///%2Fmust%2Ffail/fail sqlite3:///%2Frun%2Fshm%2Fparallel.db
```

Examples:

```
mysql://scott:tiger@my.example.com/mydb
influxdb://scott:tiger@influxdb.example.com/foo
sql:oracle://scott:tiger@ora.example.com/xe
postgresql://scott:tiger@pg.example.com/pgdb
pg:///
postgresqlssl://scott@pg.example.com:3333/pgdb
sql:sqlite2://tmp/db.sqlite?SELECT * FROM foo;
sqlite3://./db.sqlite3?SELECT%20*%20FROM%20foo;
```

Currently supported vendors:

- \* MySQL (mysql) with SSL (mysqls, mysqlssl)
- \* Oracle (oracle, ora)
- \* PostgreSQL (postgresql, pg, pgsql, postgres) with SSL (postgresqlssl, pgs, pgsqlssl, postgresssl, pgssl, postgresqls, pgsqls, postgress)
- \* SQLite2 (sqlite, sqlite2)
- \* SQLite3 (sqlite3)
- \* InfluxDB 1.x (influx, influxdb) with SSL (influxdbssl, influxdbs, influxs, influxssl)

Aliases must start with ':' and are read from /etc/sql/aliases and ~/.sql/aliases. The user's own ~/.sql/aliases should only be readable by the user.

Example of aliases:

```
:myalias1 pg://scott:tiger@pg.example.com/pgdb
:myalias2 ora://scott:tiger@ora.example.com/xe
# Short form of mysql://`whoami`:@localhost:3306/`whoami`
```

```
:myalias3 mysql:///  
# Short form of mysql://`whoami`:@localhost:33333/mydb  
:myalias4 mysql://:33333/mydb  
# Alias for an alias  
:m      :myalias4  
# the shortest alias possible  
:      sqlite2:///tmp/db.sqlite  
# Including an SQL query  
:query  sqlite:///tmp/db.sqlite?SELECT * FROM foo;
```

## EXAMPLES

### Get an interactive prompt

The most basic use of GNU **sql** is to get an interactive prompt:

```
sql sql:oracle://scott:tiger@ora.example.com/xe
```

If you have setup an alias you can do:

```
sql :myora
```

### Run a query

To run a query directly from the command line:

```
sql :myalias "SELECT * FROM foo;"
```

Oracle requires newlines after each statement. This can be done like this:

```
sql :myora "SELECT * FROM foo;" "SELECT * FROM bar;"
```

Or this:

```
sql :myora "SELECT * FROM foo;\nSELECT * FROM bar;"
```

### Copy a PostgreSQL database

To copy a PostgreSQL database use pg\_dump to generate the dump and GNU **sql** to import it:

```
pg_dump pg_database | sql pg://scott:tiger@pg.example.com/pgdb
```

### Empty all tables in a MySQL database

Using GNU **parallel** it is easy to empty all tables without dropping them:

```
sql -n mysql:/// 'show tables' | parallel sql mysql:/// DELETE FROM {};
```

### Drop all tables in a PostgreSQL database

To drop all tables in a PostgreSQL database do:

```
sql -n pg:/// 'dt' | parallel --colsep '\|' -r sql pg:/// DROP TABLE {2};
```

### Run as a script

Instead of doing:

```
sql mysql:/// < sqlfile
```

you can combine the sqlfile with the DBURL to make a UNIX-script. Create a script called *demosql*:

```
#!/usr/bin/sql -Y mysql://
```

```
SELECT * FROM foo;
```

Then do:

```
chmod +x demosql; ./demosql
```

## Use --colsep to process multiple columns

Use GNU parallel's **--colsep** to separate columns:

```
sql -s '\t' :myalias 'SELECT * FROM foo;' | parallel --colsep '\t' do_stuff {4} {1}
```

## Retry if the connection fails

If the access to the database fails occasionally **--retries** can help make sure the query succeeds:

```
sql --retries 5 :myalias 'SELECT * FROM really_big_foo;'
```

## Get info about the running database system

Show how big the database is:

```
sql --db-size :myalias
```

List the tables:

```
sql --list-tables :myalias
```

List the size of the tables:

```
sql --table-size :myalias
```

List the running processes:

```
sql --show-processlist :myalias
```

## REPORTING BUGS

GNU **sql** is part of GNU **parallel**. Report bugs to <bug-parallel@gnu.org>.

## AUTHOR

When using GNU **sql** for a publication please cite:

O. Tange (2011): GNU SQL - A Command Line Tool for Accessing Different Databases Using DBURLs, *:login: The USENIX Magazine*, April 2011:29-32.

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## DEPENDENCIES

GNU **sql** uses Perl. If **mysql** is installed, MySQL dburls will work. If **psql** is installed, PostgreSQL dburls will work. If **sqlite** is installed, SQLite2 dburls will work. If **sqlite3** is installed, SQLite3 dburls will work. If **sqlplus** is installed, Oracle dburls will work. If **rlwrap** is installed, GNU **sql** will have a command history for Oracle.

## FILES

~/.sql/aliases - user's own aliases with DBURLs

/etc/sql/aliases - common aliases with DBURLs

## SEE ALSO

**mysql(1)**, **psql(1)**, **rlwrap(1)**, **sqlite(1)**, **sqlite3(1)**, **sqlplus(1)**, **influx(1)**