POSTGRESQL 9.5 CHEAT SHEET

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HTTP://WWW.POSTGRESQL.ORG

The psql Client

psql is PostgreSQL's Command Line (non-GUI) client utility, it operates in both interactive (query) and non-interactive (batch) modes.

Common Command Line Arguments

General options

-c, --command=COMMAND
Run only single command (SQL or internal) and exit

-d, --dbname=DBNAME
Database name to connect to (default: "student")

-f, --file=FILENAME
Execute commands from file, then exit

-l, --list
List available databases, then exit

-V, --version
output version information, then exit

-X, --no-psqlrc
do not read startup file (~/.psqlrc)

-1 ("one"), --single-transaction
execute as a single transaction (if non-interactive)

-?, --help
show this help, then exit

Input and output options

-a, --echo-all
echo all input from script

-e, --echo-queries
echo commands sent to server

-E, --echo-hidden
display queries that internal commands generate

-L, --log-file=FILENAME
send session log to file

-o, --output=FILENAME
send query results to file (or lpipe)

-s, --single-step
single-step mode (confirm each query)

Output format options

-A, --no-align
unaligned table output mode

-F, --field-separator=STRING
field separator for unaligned output

-H, --html
HTML table output mode

-P, --pset=VAR[=ARG]
set printing option VAR to ARG (see \pset command)

-R, --record-separator=STRING
record separator for unaligned output

-t, --tuples-only
print rows only

-T, --table-attr=TEXT
set HTML table tag attributes (e.g., width, border)

-x, --expanded
turn on expanded table output

-z, --field-separator-zero
set field separator for unaligned output to zero byte

-0, --record-separator-zero
set record separator for unaligned output to zero byte

Connection options

-h, --host=HOSTNAME
database server host or socket directory
(PGPASSWORD)

-p, --port=PORT
database server port (PGPORT)

-U, --username=USERNAME
database user name (PGUSER)

-W, --password
force password prompt (PGPASSWORD)

Common Meta Commands

General

\g [FILE] or ; execute query (and send results to file or lpipe)

\h [NAME] help on syntax of SQL commands, * for all commands

\q quit psql

\watch [SEC] execute query every SEC seconds

Query Buffer

\e [FILE] [LINE] edit the query buffer (or file) with external editor

\ef [FUNCNAME [LINE]]
edit function definition with external editor

\p show the contents of the query buffer

\r reset (clear) the query buffer

\s [FILE] display history or save it to file

\w FILE write query buffer to file

Input/Output

\i FILE execute commands from file

\ir FILE as \i, but relative to location of current script

\o [FILE] send all query results to file or lpipe

Formatting

\a toggle between unaligned and aligned output mode

\f [STRING] show or set field separator for unaligned query output

\t [onloff] show only rows

\x [onlofflauto] toggle expanded output

Connection

\c[onnect] {[DBNAMEl- USERl- HOSTl- PORTl-] l conninfo}
connect to new database

\encoding [ENCODING]
show or set client encoding

\password [USERNAME]
securely change the password for a user

\conninfo
display information about current connection

Operating System

\cd [DIR]
change the current working directory

\setenv NAME [VALUE]
set or unset environment variable

\timing [onloff]
toggle timing of commands (currently off)

\! [COMMAND]
execute command in shell or start interactive shell

Common Describe Meta Commands

S = show system objects
+ = additional detail

\d[S+] list tables, views, and sequences

\d[S+] NAME describe table, view, sequence, or index

\sf[+] FUNCNAME show a function's definition

The following accept pattern/wildcards

\da[S]	list aggregates
\db[+]	list tablespaces
\ddp	list default privileges
\det[+]	list foreign tables
\des[+]	list foreign servers
\deu[+]	list user mappings
\dew[+]	list foreign-data wrappers
\df[S+]	list functions
\dfa[S+]	list only aggregate functions
\dfn[S+]	list only normal functions
\dft[S+]	list only trigger functions
\dfw[S+]	list only window functions
\dg[+]	list roles
\di[S+]	list indexes
\dL[S+]	list procedural languages
\dm[S+]	list materialized views
\dn[S+]	list schemas
\do[S]	list operators
\dO[S+]	list collations
\dp	list table, view, and sequence access privileges
\drds	list per-database role settings
\ds[S+]	list sequences
\dt[S+]	list tables
\dT[S+]	list data types
\du[+]	list roles
\dv[S+]	list views
\dE[S+]	list foreign tables
\dx[+]	list extensions
\dy	list event triggers
\l[+]	list databases

Bulk Loads & Extracts with /copy

The /copy meta command is the psql utility's mechanism to bulk load and/or create extracts of database tables.

```
\COPY table_name [ ( column_name [, ...] ) ]
   FROM { 'filename' l
        PROGRAM 'command' l
        STDIN }
   [ [ WITH ] ( option [, ...] ) ]


\COPY { table_name [ ( column_name [, ...] ) ] l
( query ) }
   TO {    'filename' l
        PROGRAM 'command' l
        STDOUT }
   [ [ WITH ] ( option [, ...] ) ]
```

where option can be one of:

```
    FORMAT format_name
    OIDS [ boolean ]
    FREEZE [ boolean ]
    DELIMITER 'delimiter_character'
    NULL 'null_string'
    HEADER [ boolean ]
    QUOTE 'quote_character'
    ESCAPE 'escape_character'
    FORCE_QUOTE { ( column_name [, ...] ) l * }
    FORCE_NOT_NULL ( column_name [, ...] )
    FORCE_NULL ( column_name [, ...] )
    ENCODING 'encoding_name'
```

The pg_settings Table

The pg_setting table provides information about current database settings as well as their descriptions.

Using Conninfo Strings (Common Values)

Conninfo strings are used to specify connection parameters using a single string.

Example: psql "host=pghost port=5432 dbname=payroll user=student password=pass connect_timeout=10"

host	Name of host to connect to.	**client_encoding**	Client character encoding
hostaddr	Numeric IP address of host to connect to port		
port	Port number to connect to	**connect_timeout**	Connection timeout (seconds)
dbname	The database name	**sslmode**	One of six values (disable, allow, prefer (default), require, verify-ca, verify-full)
user	User name		
password	Password	**sslcert**	Path to SSL Client Certificate
application_name	Application name (shows in pg_stat_activity	**sslkey**	Path to SSL Key file
		sslrootcert	Path to SSL Root certificate

The pg_dump Client

pg_dump dumps a database as a text file or to other formats. This command shares connection options with the pg_dump command.

Common Command Line Arguments

General options

-f, --file=FILENAME	output file or directory name
-F, --format=c|d|t|p	output file format (custom, directory, tar, plain text (default))
-j, --jobs=NUM	use this many parallel jobs to dump
-v, --verbose	verbose mode
-V, --version	output version information, then exit
-Z, --compress=0-9	compression level for compressed formats
--lock-wait-timeout=TIMEOUT	fail after waiting TIMEOUT for a table lock
-?, --help	show this help, then exit

Options controlling the output content

-a, --data-only	dump only the data, not the schema
-b, --blobs	include large objects in dump
-c, --clean	clean (drop) database objects before recreating
-C, --create	include commands to create database in dump
-E, --encoding=ENCODING	dump the data in encoding ENCODING
-n, --schema=SCHEMA	dump the named schema(s) only
-N, --exclude-schema=SCHEMA	do NOT dump the named schema(s)
-o, --oids	include OIDs in dump
-O, --no-owner	skip restoration of object ownership in plain-text format
-s, --schema-only	dump only the schema, no data
-S, --superuser=NAME	superuser user name to use in plain-text format
-t, --table=TABLE	dump the named table(s) only
-T, --exclude-table=TABLE	do NOT dump the named table(s)
-x, --no-privileges	do not dump privileges (grant/revoke)
--binary-upgrade	for use by upgrade utilities only
--column-inserts	dump data as INSERT commands with column names
--disable-dollar-quoting	disable dollar quoting, use SQL standard quoting
--disable-triggers	disable triggers during data-only restore
--exclude-table-data=TABLE	do NOT dump data for the named table(s)
--if-exists	use IF EXISTS when dropping objects
--inserts	dump data as INSERT commands, rather than COPY
--no-security-labels	do not dump security label assignments
--no-synchronized-snapshots	do not use synchronized snapshots in parallel jobs
--no-tablespaces	do not dump tablespace assignments
--no-unlogged-table-data	do not dump unlogged table data
--quote-all-identifiers	quote all identifiers, even if not key words
--section=SECTION	dump named section (pre-data, data, or post-data)
--serializable-deferrable	wait until the dump can run without anomalies
--use-set-session-authorization	use SET SESSION AUTHORIZATION commands instead of ALTER OWNER commands to set ownership

Connection Options

Connection options match those of the psql command.

The pg_restore Client

The pg_restore client is used to restore backups made with pg_dump using the tar, directory, or custom dump format. It creates a *plain text* dump from an existing custom dump (suitable for use with psql); or connects directly to PostgreSQL to restore data.

Connection arguments match that of psql.

General options

-d, --dbname=NAME	connect to database name
-f, --file=FILENAME	output file name
-l, --list	print summarized TOC of the archive
-v, --verbose	verbose mode
-V, --version	output version information, then exit
-?, --help	show this help, then exit

Options controlling the restore

Options match the output options of the pg_dump command.

Connection Options

Connection options match those of the psql command.

Custom Dump Formats

Custom dump formats (-F) allow pg_dump to generate improved format outputs that allow for more flexible recovery, and (in some cases) faster output.

-Fd   **Format: directory**
Produces the output in a directory (rather than a single file.) When using -Fd, the --file argument should be a directory. Can be combined with the -j argument (and usually --serializable-deferrable) to produce a *parallel* dump to dump multiple objects simultaneously.

-Fc   **Format: custom**
Produces a special compressed format. Optimal for single object/table restores with pg_restore.

-Ft   **Format: tar**
Produces a tar file output that matches the output that would result if the -Fd argument was used, then the result tarred up. Cannot be used with -j for parallel dumps.

Statistics Tables

pg_stat_activity
Provide information about currently running queries/processes on the server (cluster-wide.)

pg_stat_bgwriter
Provide cluster-wide statistics from the background writer process, including checkpoint statistics and buffer write statistics.

pg_stat_database
Provide rollup statistics at the database level

pg_stat_database_conflicts
Provide database-level statistics regarding the number of queries that have been canceled in this database due to dropped tablespaces, lock timeouts, old snapshots, pinned buffers and deadlocks (standby servers only.)

pg_stat_replication
Provide statistic information regarding replication slave servers and their current state.

Statistics Tables (cont'd)

pg_stat_all_tables
Provides row-level statistics for each table in the current database.

pg_stat_sys_tables
Same as pg_stat_all_tables, except that only system tables are shown.

pg_stat_user_tables
Same as pg_stat_all_tables, except that only user tables are shown.

pg_stat_xact_all_tables
Similar to pg_stat_all_tables, but counts actions taken so far within the current transaction (which are not yet included in pg_stat_all_tables and related views).

pg_stat_xact_sys_tables
Same as pg_stat_xact_all_tables, except that only system tables are shown.

pg_stat_xact_user_tables
Same as pg_stat_xact_all_tables, except that only user tables are shown.

pg_stat_all_indexes
Provides row-level statistics for each index in the current database.

pg_stat_sys_indexes
Same as pg_stat_all_indexes, except that only indexes on system tables are shown.

pg_stat_user_indexes
Same as pg_stat_all_indexes, except that only indexes on user tables are shown.

pg_statio_all_tables
Provides block-level statistics for each table in the current database.

pg_statio_sys_tables
Same as pg_statio_all_tables, except that only system tables are shown.

pg_statio_user_tables
Same as pg_statio_all_tables, except that only user tables are shown.

pg_statio_all_indexes
Provides block-level statistics for each index in the current database.

pg_statio_sys_indexes
Same as pg_statio_all_indexes, except that only indexes on system tables are shown.

pg_statio_user_indexes
Same as pg_statio_all_indexes, except that only indexes on user tables are shown.

pg_statio_all_sequences
Provides block-level statistics for each sequence in the current database.

pg_statio_sys_sequences
Same as pg_statio_all_sequences, except that only system sequences are shown.

pg_statio_user_sequences
Same as pg_statio_all_sequences, except that only user sequences are shown.

pg_stat_user_functions
Provides information about function execution (number of calls, total time, and the amount of time spent in the function itself (self_time)

pg_stat_xact_user_functions
Similar to pg_stat_user_functions, but counts only calls during the current transaction (which are not yet included in pg_stat_user_functions).