psql PostgreSQL shell

START HERE

`psql -h <host> -U <user> -d <db>`
Connect

`\x auto`
Vertical output if wide

`\l`
List databases

`\timing`
Time each query

`\dt`
List tables

`\copy <table> to '<file>' csv header`
Export CSV

`\d <table>`
Describe a table

`\q`
Quit

Connect flags, URI, env → **Query buffer** SQL ending in ; → **Result** format with \pset → **Output** \o, \g, \copy

CONCEPTS

Backslash commands belong to psql, not SQL: they end at the line break and need no semicolon. SQL statements need a closing ;.

Missing connection flags fall back to PGHOST, PGPORT, PGUSER, PGDATABASE and ~/.pgpass, then to the local socket and your OS user name.

Put \set, \pset and \timing lines in ~/.psqlrc to apply them to every session; -X skips that file.

CONNECT

`psql -h <host> -p <port> -U <user> -d <db>`
Connect with explicit options

`psql "postgresql://<user>@<host>:<port>/<db>"`
Connect with a URI
Add ?sslmode=require for TLS.

`psql <db>`
Connect to a local database

`psql -l`
List databases and exit

`psql -w ...`
Never ask for a password
Fails if no password is found; useful in scripts.

`psql "service=<name>"`
Use a named connection service

`\c <db> [<user>]`
Switch database in the session

`\conninfo`
Show the current connection

`\password [<user>]`
Change a password safely
Hashed on the client, so it stays out of logs and history.

`\q`
Quit
Ctrl+D also quits.

INSPECT

`\l`
List databases

`\dt`
List tables
*Only the schemas on your search_path; use \dt *.* for all.*

INSPECT (cont.)

`\d <table>`
Columns, indexes and constraints

`\d+ <table>`
Same plus size and storage
Slower on large catalogs.

`\dn`
List schemas

`\du`
List roles

`\dv`
List views

`\di`
List indexes

`\df <pattern>`
List functions

`\dx`
List installed extensions

`\dp <table>`
Show access privileges

`\sf <function>`
Show a function's source

`\sv <view>`
Show a view's definition

`\dt <schema>.*`
Tables in one schema
*Patterns: * and ? are wildcards; quote names to keep case.*

RUN SQL

`psql -c "<sql>"`
Run one statement and exit

`psql -f <file.sql>`
Run a script file

`\i <file>`
Run a file inside psql

`\ir <file>`
Run a file relative to this script

`\e`
Edit the query in $EDITOR

`\g`
Run the buffer again

`\gx`
Run once with vertical output

`\p`
Print the query buffer

`\r`
Clear the query buffer

`\watch <seconds>`
Repeat the query every n seconds
Stop with Ctrl+C.

RUN SQL (cont.)

`\gexec`
Run each result cell as SQL
Generate statements with format(), then execute them.

`psql -1 -f <file.sql>`
Run a script in one transaction
Pair with -v ON_ERROR_STOP=1 to roll back on error.

`\ef <function>`
Edit a function definition

`\s`
Show command history

OUTPUT

`\x auto`
Expanded mode only when wide

`\x`
Toggle vertical output

`\timing`
Toggle query timing

`\pset null '<text>'`
Show NULL as text

`\pset format <fmt>`
Choose aligned, csv, html or more

`\pset pager off`
Disable the pager

`\t`
Toggle header and footer off

`psql -A -t -c "<sql>"`
Bare values for scripts

`psql --csv -c "<sql>"`
CSV output

`\o <file>`
Send results to a file
\o with no argument switches back to the screen.

`\crosstabview`
Pivot the result

`\echo <text>`
Print text to stdout

IMPORT & EXPORT

`\copy <table> from '<file>' csv header`
Load a CSV file
Runs client-side: reads your local file, no superuser needed.

`\copy <table> to '<file>' csv header`
Export a table to CSV

`\copy (<query>) to '<file>' csv header`
Export a query result

IMPORT & EXPORT (cont.)

`\copy <table> (<cols>) from stdin`
Load from standard input

`\copy ... with (format csv, delimiter ';')`
Set CSV options

`\g (format=csv) <file>`
Write one result as CSV

\copy or COPY?

Form	File lives on
`\copy`	your machine (client)
`COPY`	database server

VARIABLES & SCRIPTING

`\set <name> <value>`
Set a psql variable

`psql -v <name>=<value>`
Set a variable from the shell

`SELECT :'<name>';`
Use a variable as a quoted literal
Use :name raw and :"name" as an identifier.

`\set ON_ERROR_STOP on`
Abort a script on first error

`\set AUTOCOMMIT off`
Open transactions implicitly

`\set ECHO queries`
Print each statement sent

`\gset [<prefix>]`
Store a one-row result in variables

`\if <cond> ... \endif`
Conditional script parts

`\? / \h <command>`
Help for psql or SQL

RECIPES

Export a query to CSV

```
\copy (SELECT * FROM <table>
WHERE <cond>) to 'out.csv' csv
header
```

Safe migration script

```
psql -X -1 -v ON_ERROR_STOP=1 -f
migrate.sql <db>
```

Bare value into a shell variable

```
n=$(psql -At -c "SELECT count(*)
FROM <table>" <db>)
```

Handy ~/.psqlrc

```
-- ~/.psqlrc
\set QUIET 1
\timing on
\x auto
\pset null '(null)'
\unset QUIET
```