

BT5110 Data Management and Warehousing

Tutorial 0 Special: Fundamental psql Operations

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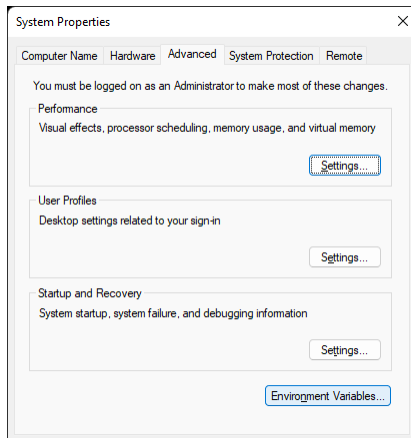
Aug 2021



Configuration on Windows PC (8/10/11)

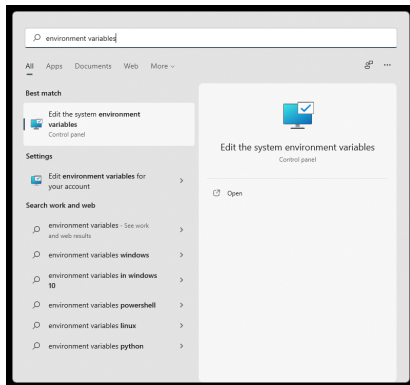
(1-a) Right click my PC, click “Properties”.

Go to “Advanced” tab, click the “Environment Variables” button.



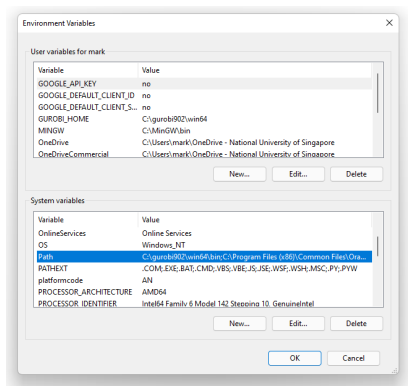
Configuration on Windows PC

(1-b) Alternatively, you may also click “start” and type keyword to search, like the figure below:



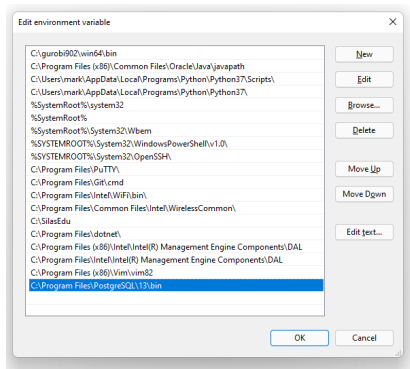
Configuration on Windows PC

(2) Find the “Path” in system variables.



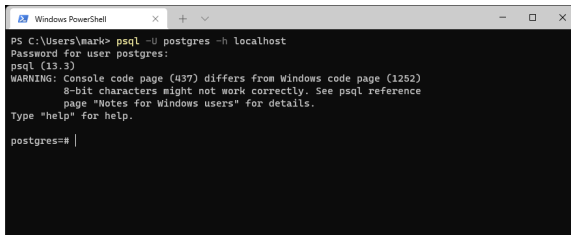
Configuration on Windows PC

(3) Add your PostgreSQL 13 installation path
(typically C:\\Program Files\\PostgreSQL\\13\\bin).



Connect to psql server on Windows PC

Open “Command Line”/“Windows Terminal”, and type in the command below to connect PostgreSQL.

A screenshot of a Windows PowerShell window. The title bar reads "Windows PowerShell". The command prompt shows the user 'mark' at 'C:\Users\mark>' typing the command 'psql -U postgres -h localhost'. The prompt then asks for the password for the 'postgres' user. The user has entered the password, and the prompt shows 'postgres=#'. A warning message is displayed: 'WARNING: Console code page (437) differs from Windows code page (1252) 8-bit characters might not work correctly. See psql reference page "Notes for Windows users" for details. Type "help" for help.'

```
PS C:\Users\mark> psql -U postgres -h localhost
Password for user postgres:
psql (13.3)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

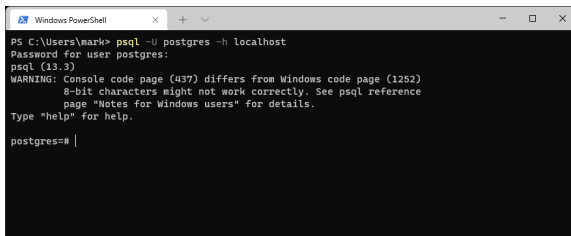
postgres=# |
```

Caution

Don't just enter “psql” as it assumes you are connecting with your Windows login account (e.g., **mark** in this case). However, in a fresh installed PostgreSQL, there is no such user but only “**postgres**”.

Connect to psql server on Mac

On Mac, you can just connect to a server by double clicking the specific icon on Postgres app.

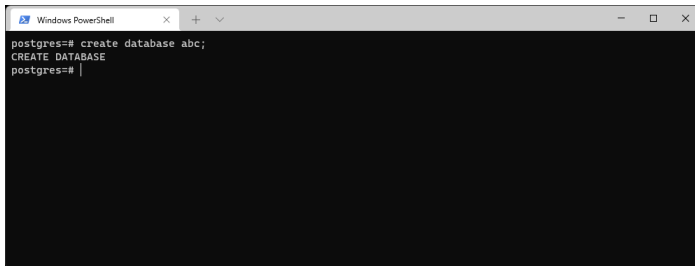


```
Windows PowerShell
PS C:\Users\mark> psql -U postgres -h localhost
Password for user postgres:
psql (13.3)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

postgres=# |
```

Create a new database

Enter “create database abc;” to **create** a database named “abc”.

A screenshot of a Windows PowerShell terminal window. The title bar at the top says "Windows PowerShell" and has standard window controls (minimize, maximize, close). The terminal content shows a PostgreSQL prompt "postgres=#" followed by the command "create database abc;". The command is executed, and the output "CREATE DATABASE" is displayed. The prompt "postgres=#" is shown again with a vertical cursor line following it.

```
postgres=# create database abc;  
CREATE DATABASE  
postgres=# |
```


Browse all databases

Enter “\l” to **list** all databases.

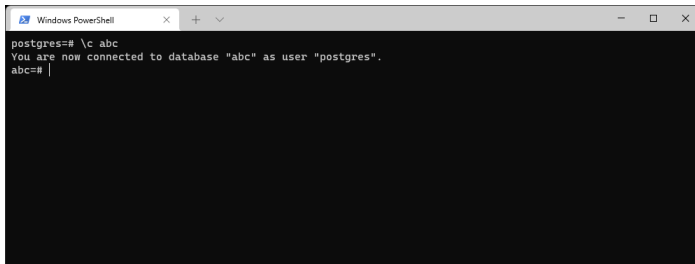
```
Windows PowerShell
postgres=# \l
```

List of databases					
Name	Owner	Encoding	Collate	Ctype	Access privileges
BT5110	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
abc	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
postgres	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
template0	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	=c/postgres +
template1	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	postgres=CTc/postgres =c/postgres

```
-- More --
```

Connect to a database

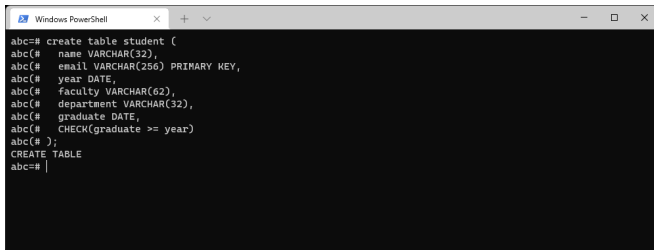
Enter “\c abc” to **connect** with the database “abc”.

A screenshot of a Windows PowerShell terminal window. The title bar shows 'Windows PowerShell' with standard window controls. The terminal has a black background with white text. The prompt 'postgres=#' is followed by the command '\c abc'. The next line shows the confirmation message: 'You are now connected to database "abc" as user "postgres".'. The prompt changes to 'abc=#' with a cursor at the end.

```
postgres=# \c abc
You are now connected to database "abc" as user "postgres".
abc=# |
```

Create a table

Let's create a table "student", which is exactly same as the one we will use for Tutorial 1.

A screenshot of a Windows PowerShell window. The title bar shows 'Windows PowerShell' with standard window controls. The command prompt shows a user 'abc' at a prompt '#' entering a SQL command to create a table named 'student'. The command is: 'create table student (' followed by several lines of column definitions: 'name VARCHAR(32),', 'email VARCHAR(256) PRIMARY KEY,', 'year DATE,', 'faculty VARCHAR(62),', 'department VARCHAR(32),', 'graduate DATE,', and 'CHECK(graduate >= year)'. The command ends with ');' followed by a new line 'CREATE TABLE' and another prompt line 'abc=# |' where the cursor is positioned.

```
abc=# create table student (  
abc(#   name VARCHAR(32),  
abc(#   email VARCHAR(256) PRIMARY KEY,  
abc(#   year DATE,  
abc(#   faculty VARCHAR(62),  
abc(#   department VARCHAR(32),  
abc(#   graduate DATE,  
abc(#   CHECK(graduate >= year)  
abc(# );  
CREATE TABLE  
abc=# |
```

View existing tables

Enter “\d” to **display** all relations in the current database.

Enter “\d student” to **display** the details of the table “student”.

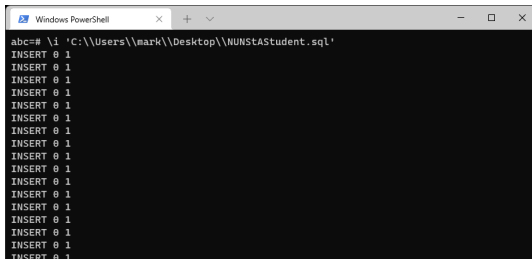
```
Windows PowerShell
abc=# \d
      List of relations
 Schema | Name   | Type  | Owner
-----+-----+-----+-----
 public | student | table | postgres
(1 row)

abc=# \d student
      Table "public.student"
  Column |          Type          | Collation | Nullable | Default
-----+-----+-----+-----+-----
 name    | character varying(32)  |           |          |
 email   | character varying(256) |           | not null |
 year    | date                   |           |          |
 faculty | character varying(62)  |           |          |
 department | character varying(32) |           |          |
 graduate | date                   |           |          |
Indexes:
    "student_pkey" PRIMARY KEY, btree (email)
Check constraints:
    "student_check" CHECK (graduate >= year)

abc=#
```

Execute an SQL script from files

Now let's insert some data. To save time, we just make use of the SQL script provided for our tutorials – “NUNStASStudent.sql”



```
Windows PowerShell
abc=# .i 'C:\\Users\\mark\\Desktop\\NUNStASStudent.sql'
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
INSERT 0 1
```

Caution (Windows only)

Please be cautious that the file path on Windows must be formatted with double “//” and enclosed within single-quote symbols (“C:\\Users\\mark\\Desktop\\NUNStASStudent.sql ” in this case). Otherwise a Permission Denied error will be returned.

Execute an SQL script from files (Cont.)

On Mac, you can just drag the file to the terminal, the path is automatically formatted.

E.g.,

Execute an SQL script manually

Enter SQL query manually to view outputs.

```
Windows PowerShell
abc=# select * from student;
```

name	email	year	faculty	department	graduate
XIE XIN	xiexin2011@gmail.com	2007-01-01	Faculty of Science	Chemistry	
HUANG RAN	huangran1991@yahoo.com	2007-08-01	Faculty of Science	Biology	
GOH ENG CHYE	gohengchye1992@msn.com	2007-08-01	School of Computing	CS	
GOH HUI YING	gohhuiying1989@gmail.com	2008-01-01	Faculty of Science	Biology	
FANG HAN	fanghan2011@hotmail.com	2008-01-01	Faculty of Arts and Social Science	Geography	
DING KUAN CHONG	dingkuanchong2010@msn.com	2008-08-01	Faculty of Engineering	CE	
TAY WEI GUO	tayweiguo1989@msn.com	2010-01-01	Faculty of Engineering	CE	
ONG KAH HONG	ongkahhong1991@gmail.com	2008-01-01	Faculty of Science	Math	
PENG JIAYUAN	pengjiayuan2011@hotmail.com	2008-01-01	Faculty of Science	Biology	
HUANG ZHANPENG	huangzhanpeng1992@msn.com	2010-01-01	Faculty of Arts and Social Science	Geography	

```
-- More --
```

```
Windows PowerShell
abc=# select COUNT(*) from student;
```

count
103

```
(1 row)

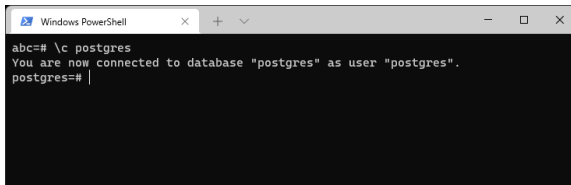
abc=#
```

Disconnect & Drop a database

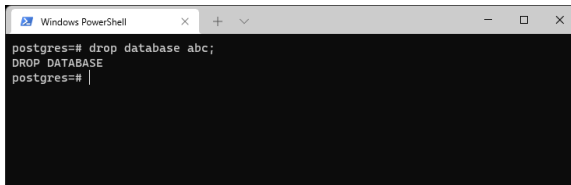
To drop the current database, you have to disconnect it first.

To do that, just connect to the other one by entering “\c postgres” to **connect** to the default database “postgres”.

Then enter “drop database abc” to **drop** the database we have just created.



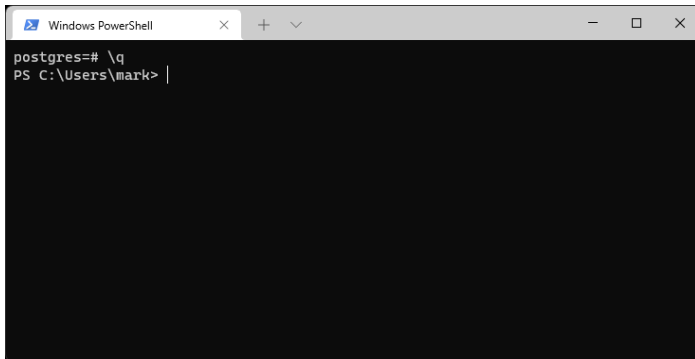
```
Windows PowerShell
abc=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=#
```



```
Windows PowerShell
postgres=# drop database abc;
DROP DATABASE
postgres=#
```


Quit the psql

Enter “\q” to **quit**.

A screenshot of a Windows PowerShell window. The title bar at the top says "Windows PowerShell" and has standard window controls (minimize, maximize, close). The main area is black with white text. It shows a prompt "postgres=#" followed by the command "\q" entered. Below that, it shows the prompt "PS C:\Users\mark>" with a cursor. The window is titled "Windows PowerShell" and has standard window controls (minimize, maximize, close).

```
postgres=# \q
PS C:\Users\mark> |
```

For any further question, please feel free to email me:

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