

# BT5110 Data Management and Warehousing

## Tutorial 0 Special: Fundamental psql Operations

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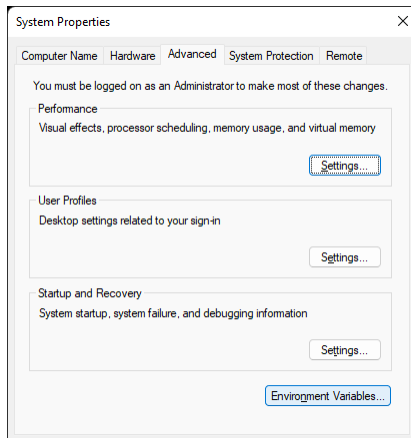
Aug 2021



# Configuration on Windows PC (8/10/11)

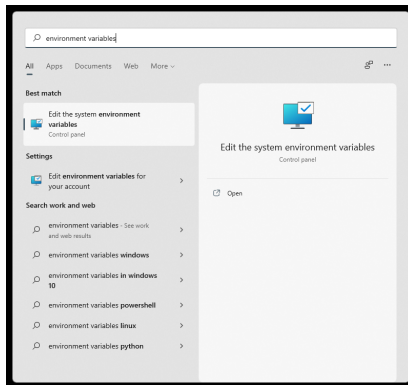
(1-a) Right click my PC, click “Properties”.

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



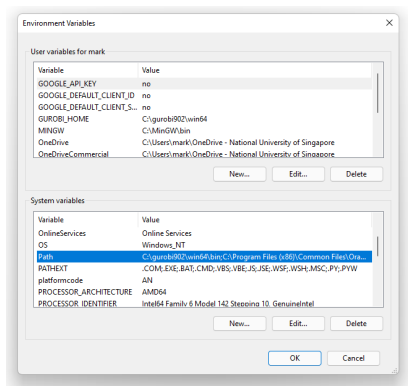
# Configuration on Windows PC

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



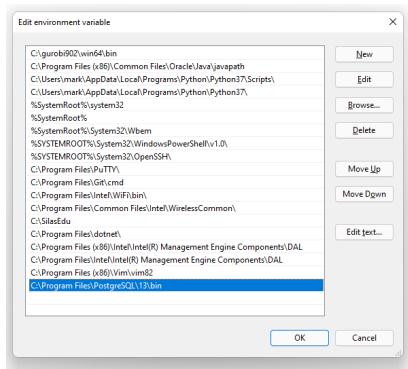
# Configuration on Windows PC

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



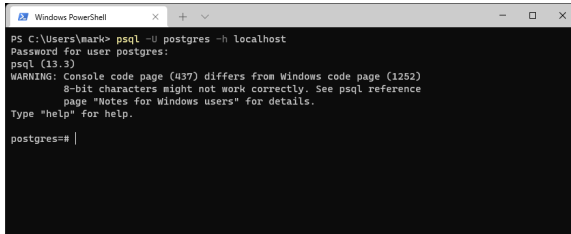
# Configuration on Windows PC

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



# Connect to psql server

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



```
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.

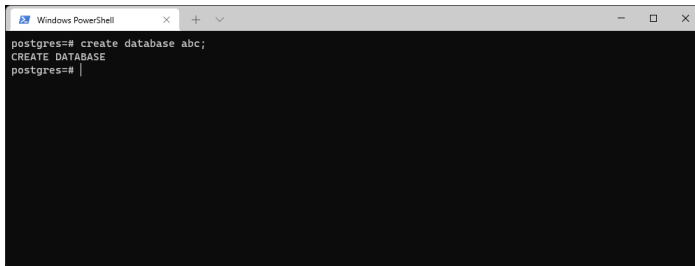
postgres=# |
```

## 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**”.

# 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 reads "Windows PowerShell" and includes 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=#" appears 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
```

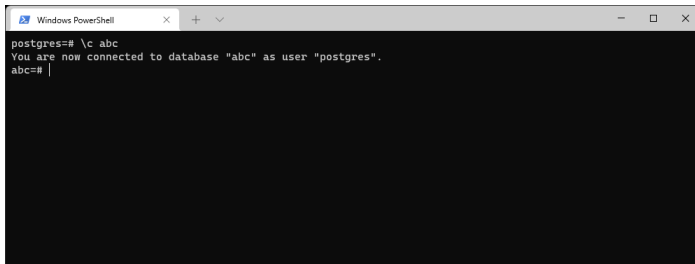
List of databases					
Name	Owner	Encoding	Collate	Ctype	Access privileges
BT5110	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
abc	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
postgres	postgres	UTF8	English_Singapore.1252	English_Singapore.1252	
template0	postgres	UTF8	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

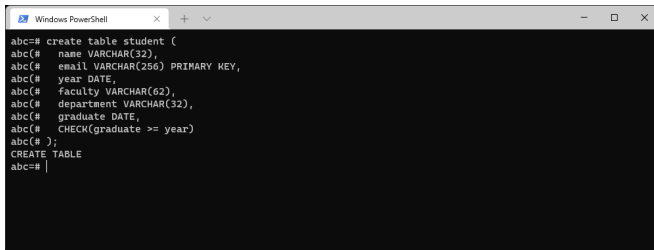
Enter “\c abc” to **connect** with the database “abc”.

A screenshot of a Windows PowerShell terminal window. The title bar at the top reads "Windows PowerShell" and includes standard window controls (close, maximize, minimize). The terminal content shows a prompt "postgres=#" followed by the command "\c abc". The next line shows a confirmation message: "You are now connected to database \"abc\" as user \"postgres\"." The prompt then changes to "abc=#" with a cursor following it.

```
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 series of commands to create a table named 'student'. The commands are: 'abc=# create table student (' followed by several lines of column definitions: 'abc(# name VARCHAR(32),', 'abc(# email VARCHAR(256) PRIMARY KEY,', 'abc(# year DATE,', 'abc(# faculty VARCHAR(62),', 'abc(# department VARCHAR(32),', 'abc(# graduate DATE,', and 'abc(# CHECK(graduate >= year)'. This is followed by 'abc(# );' and 'CREATE TABLE'. The prompt 'abc=#' is at the end of the last line.

```
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”.

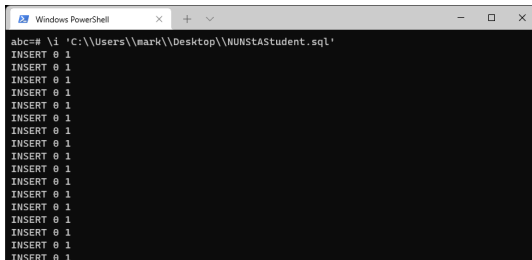
```
Windows PowerShell
abc=# \d
      List of relations
 Schema | Name   | Type | Owner
-----+-----+-----+-----
 public | student | table | postgres
(1 row)

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
INSERT 0 1
```

## Caution

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 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)

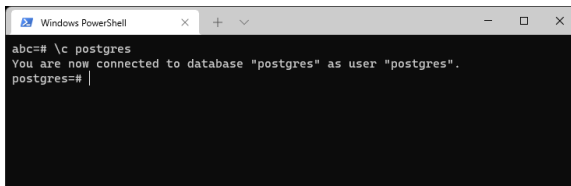
abc=#
```

# Disconnect & Drop a database

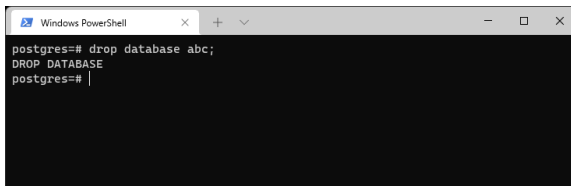
To drop the current database, you have to disconnect it first.

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.



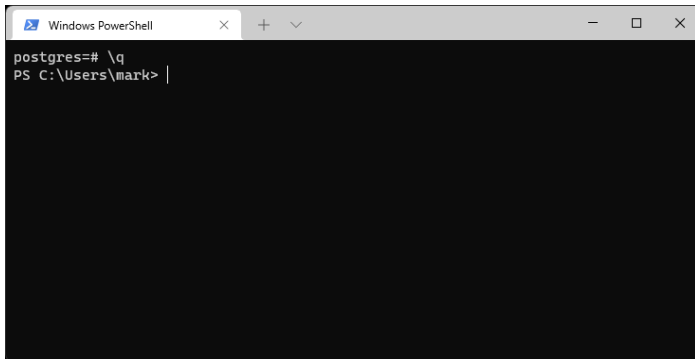
```
Windows PowerShell
abc=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=#
```



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

# Quit the psql

Enter “\q” to **quit**.

A screenshot of a Windows PowerShell terminal window. The title bar at the top reads "Windows PowerShell" and includes standard window controls (minimize, maximize, close). The terminal content shows a prompt "postgres=#" followed by the command "\q" entered on the next line. Below that, the prompt changes to "PS C:\Users\mark>" with a cursor at the end of the line.

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

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

[hmeng@comp.nus.edu.sg](mailto:hmeng@comp.nus.edu.sg)