Assignment-2

Module 12: Building Database Apps with PostgreSQL & Python

❖ Introduction to data

- Data is a collection of information.
- Datum – Single piece of information.
- Example – Data of a student: like (name, id, age, DOB, Gender, etc.

❖ Introduction to database

➢ Organized

- Tables by means of rows and columns.
- Can be easily Accessed, Managed & Updated

➢ Main purpose

- To operate a large amount of information by storing, retrieving, and managing them.
- Many databases are available like,
  - MySQL
  - Oracle
  - PostgreSQL
  - MongoBD, etc..
- Note: Types of Databases
  - Hierarchical database
  - NoSQL database
  - Object oriented database
  - Relational database
  - Network database

❖ Introduction to PostgreSQL

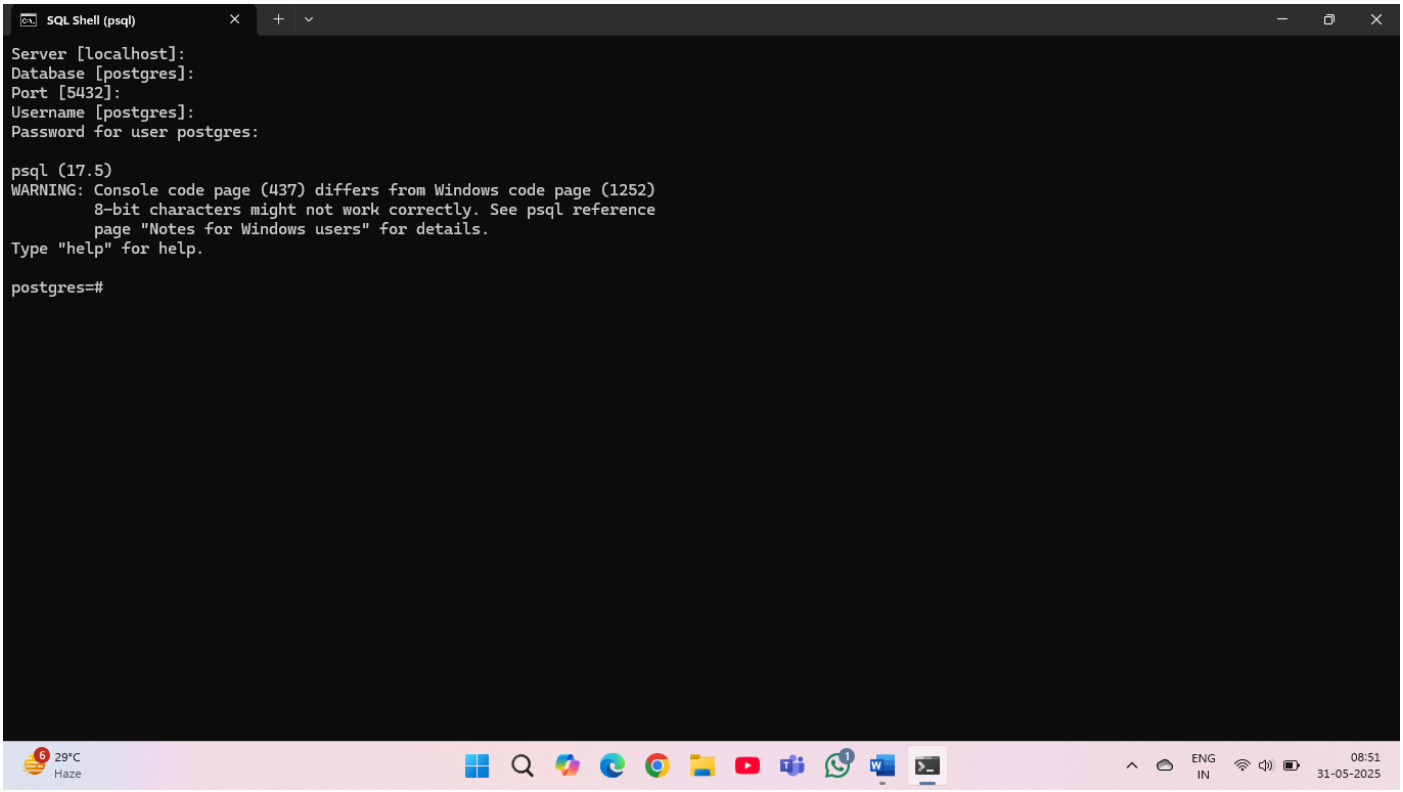
- Relational Database
  - Categorized by a set of tables
  - SQL(Structured Query Language)
  - Acts as the application interface
  - Easier to modify
  - Extending the database
  - Joining the database

- PostgreSQL
  - Object – relational database:
    - Object oriented database + relational database
    - Similar to relational database
    - Object oriented database -> object , classes & inheritance are supported.
    - Open source
    - Source code is available under PostgreSQL license
    - Building of commercial apps

❖ Installing PostgreSQL

➢ Go to PostgreSQL website and download the application
➢ Then install the app and don't forget to set of password and port no.
➢ The port no is: 5432 or 5433 (according to your device)
➢ And the password to help to login to PostgreSQL (SQL shell (psql)) Then you perform your tasks to psql.

➢ Open it PostgreSQL and the password are require to you created to installing time.



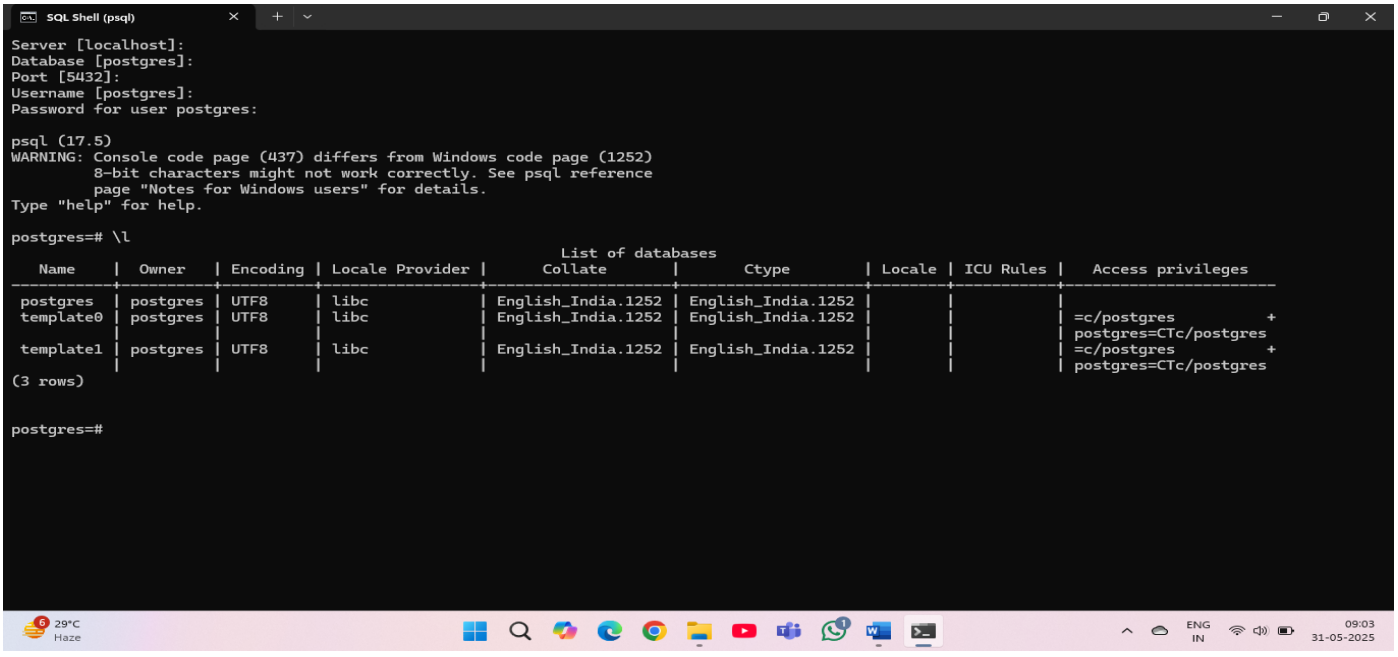
Like that .

❖ Creating a database

- Open psql and enter your password.

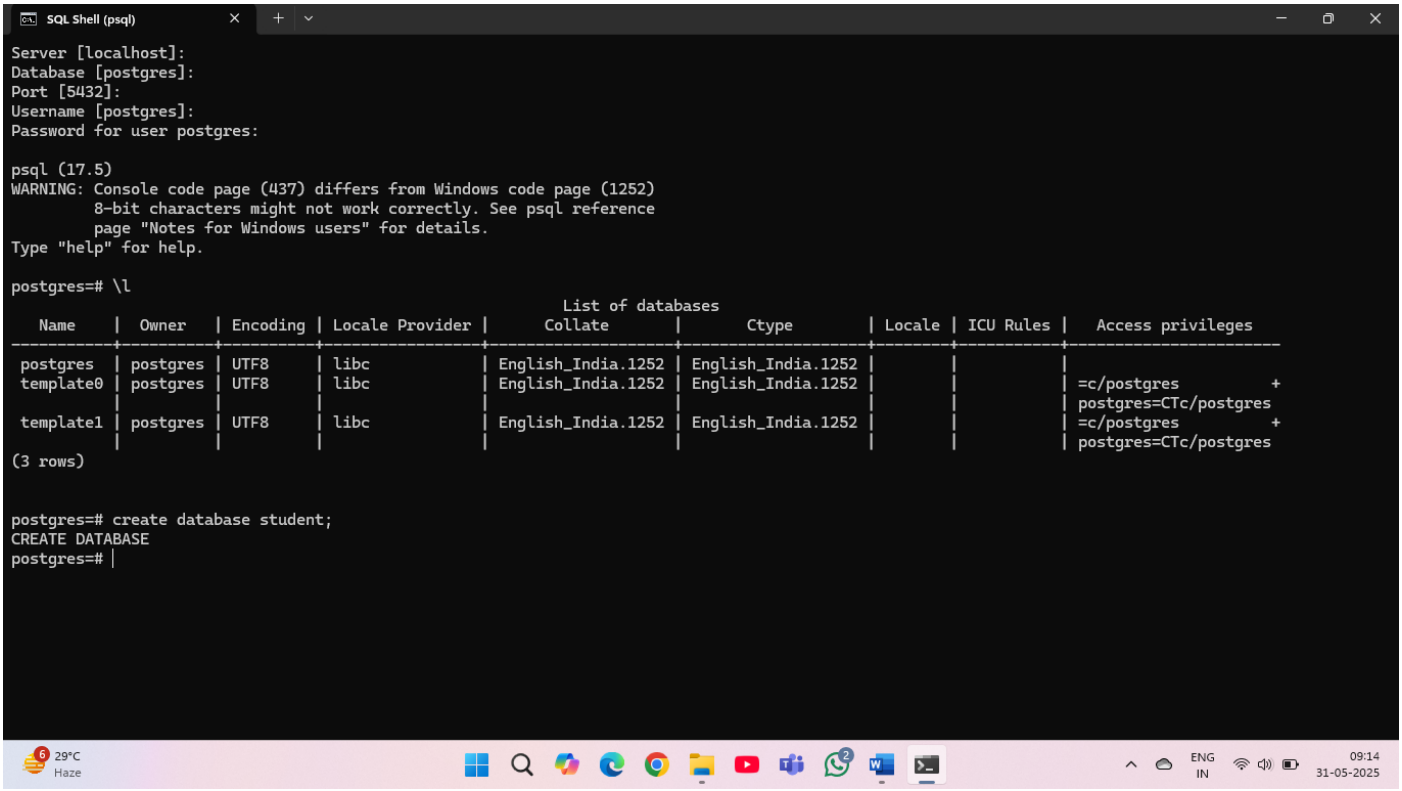
Note: what are the databases that are available inside the shell.

You just type : \l



Like that.

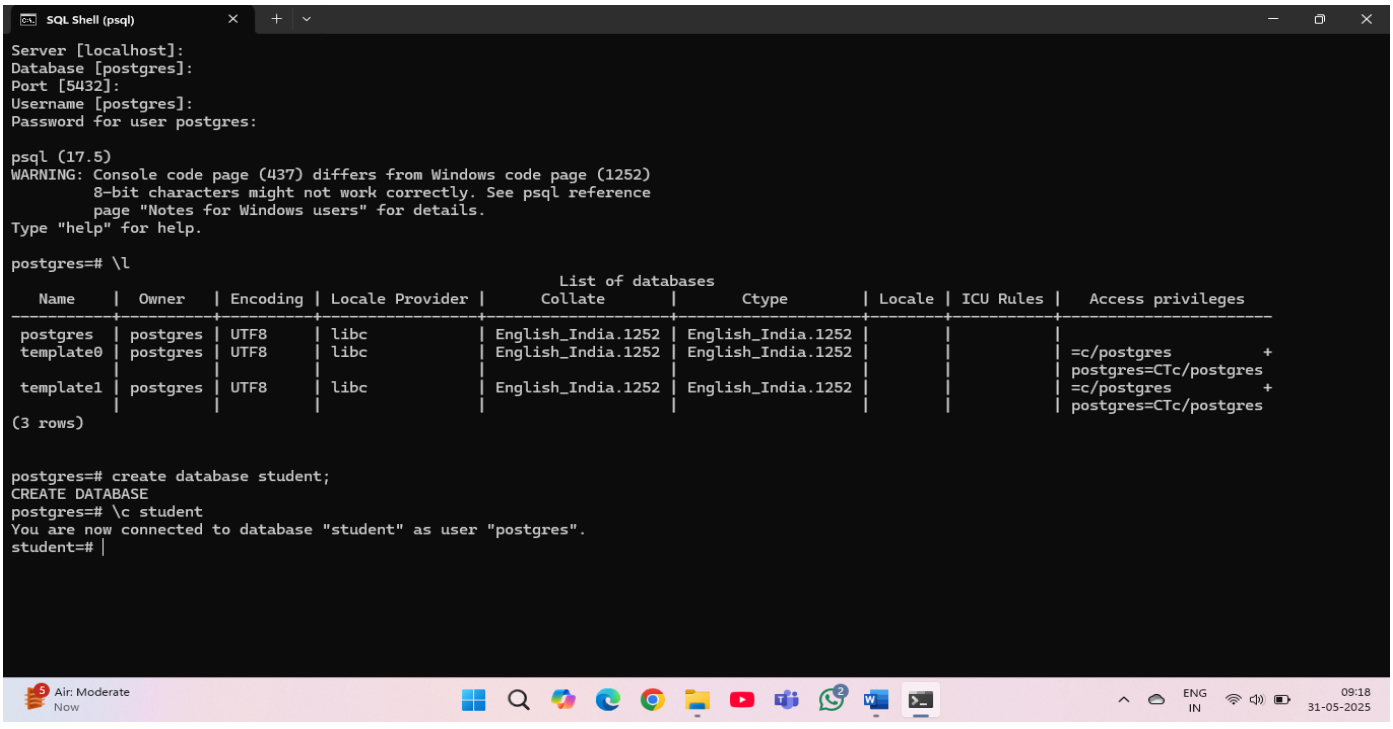
- Create a database
  - ❖ The command is: create database database_name;



Like that.

Note: to switch database one to another.

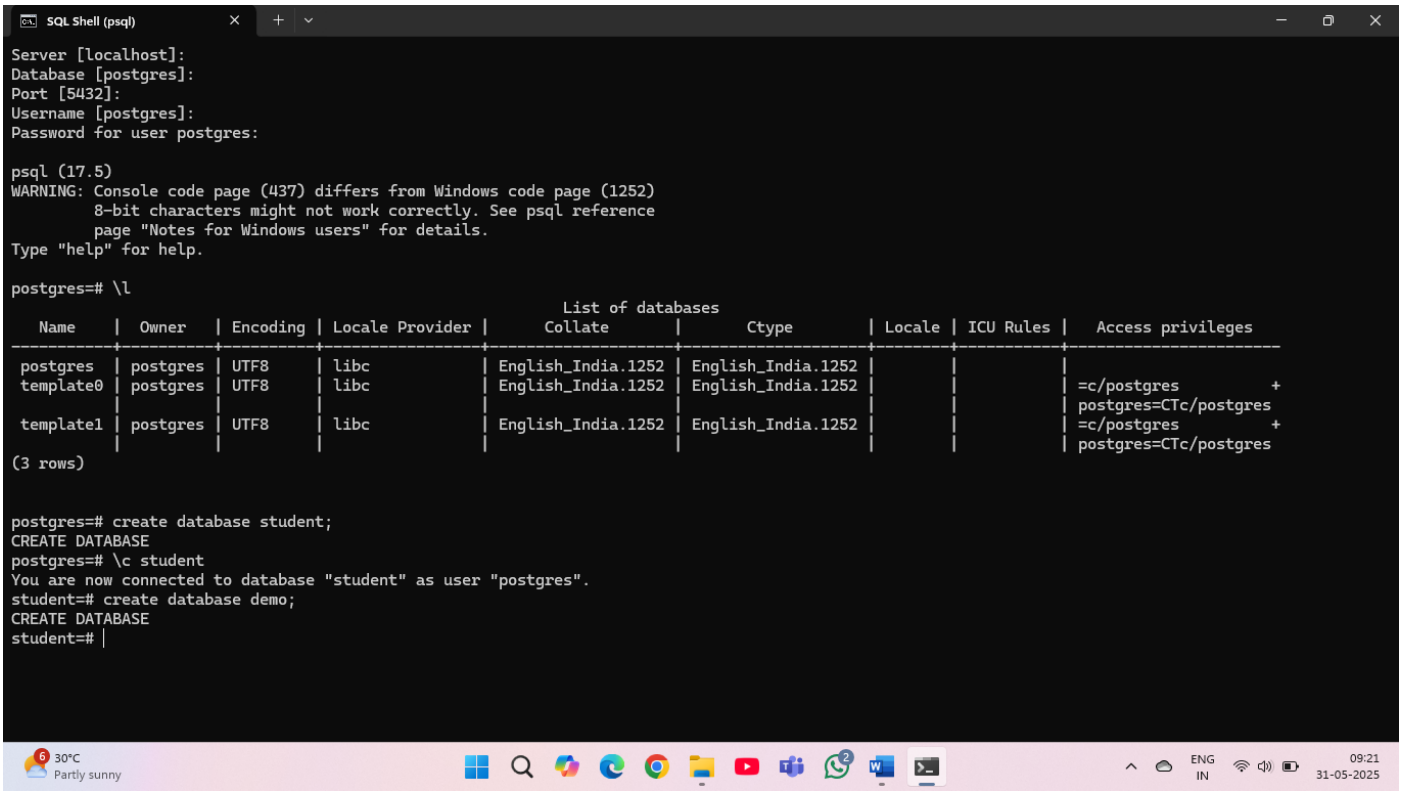
The command is: \c database_name



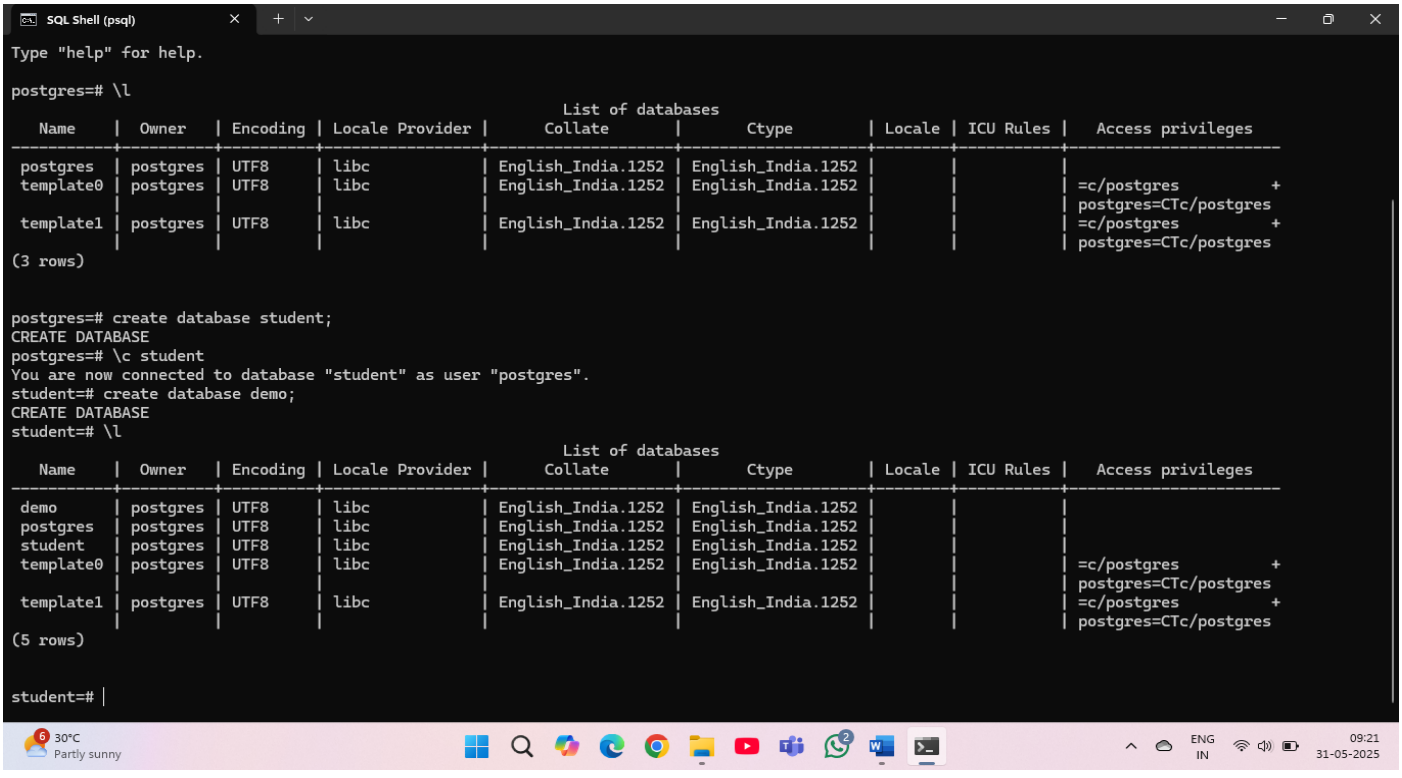
Like that.

- ❖ Deleting a database
  - The command is : drop database database_name;
  - For eample:

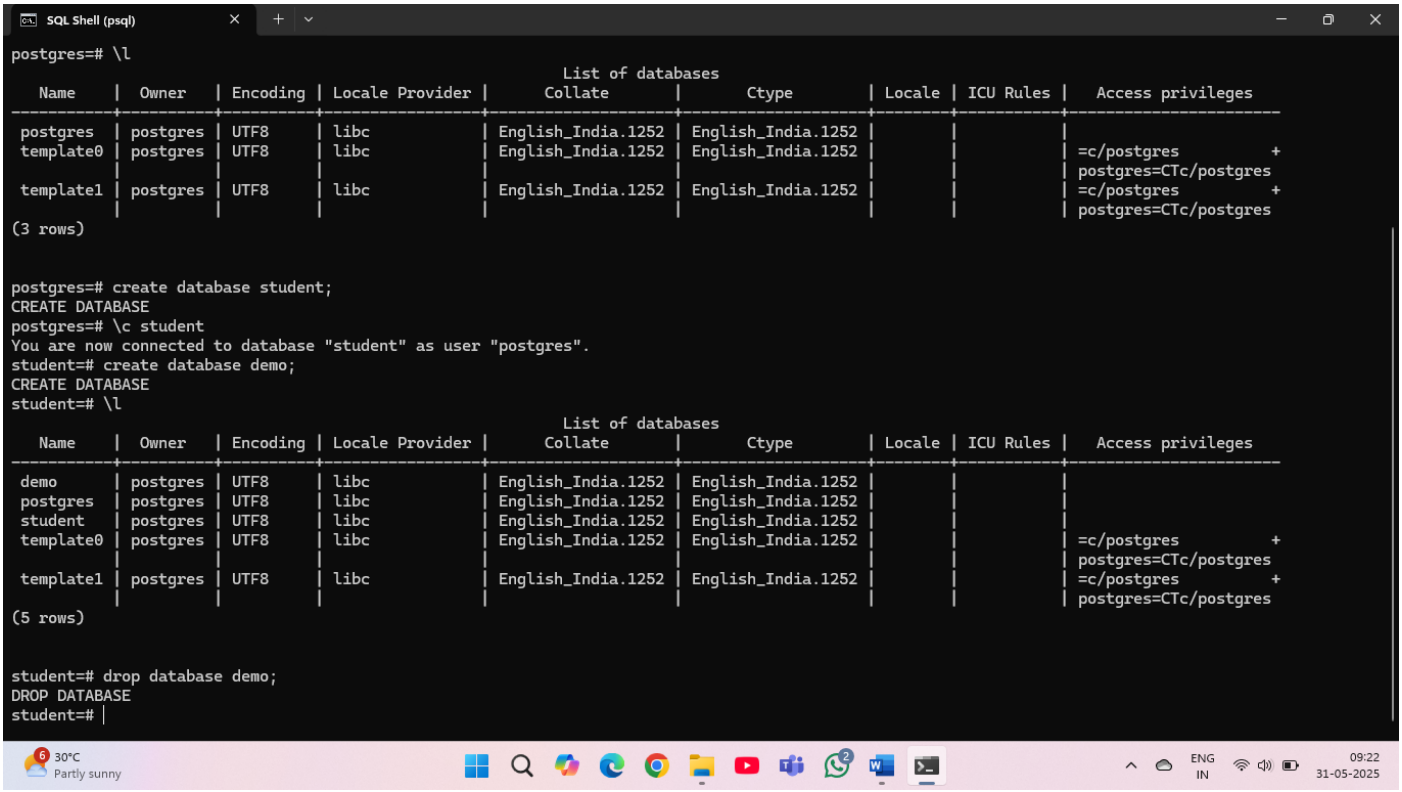
➢ Create a database (demo)



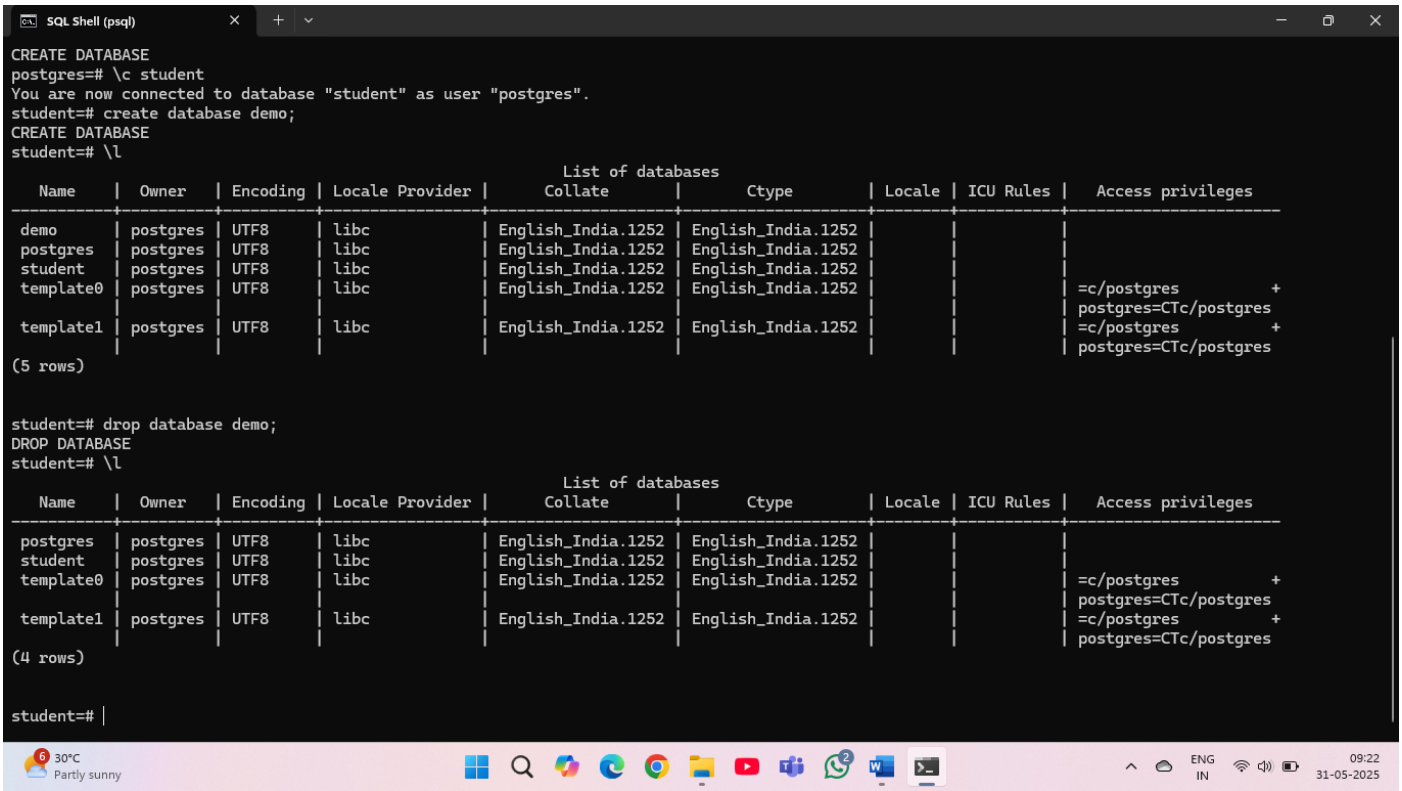
➢ Check available databases



➢ Delete database



➢ Check database are deleted or not

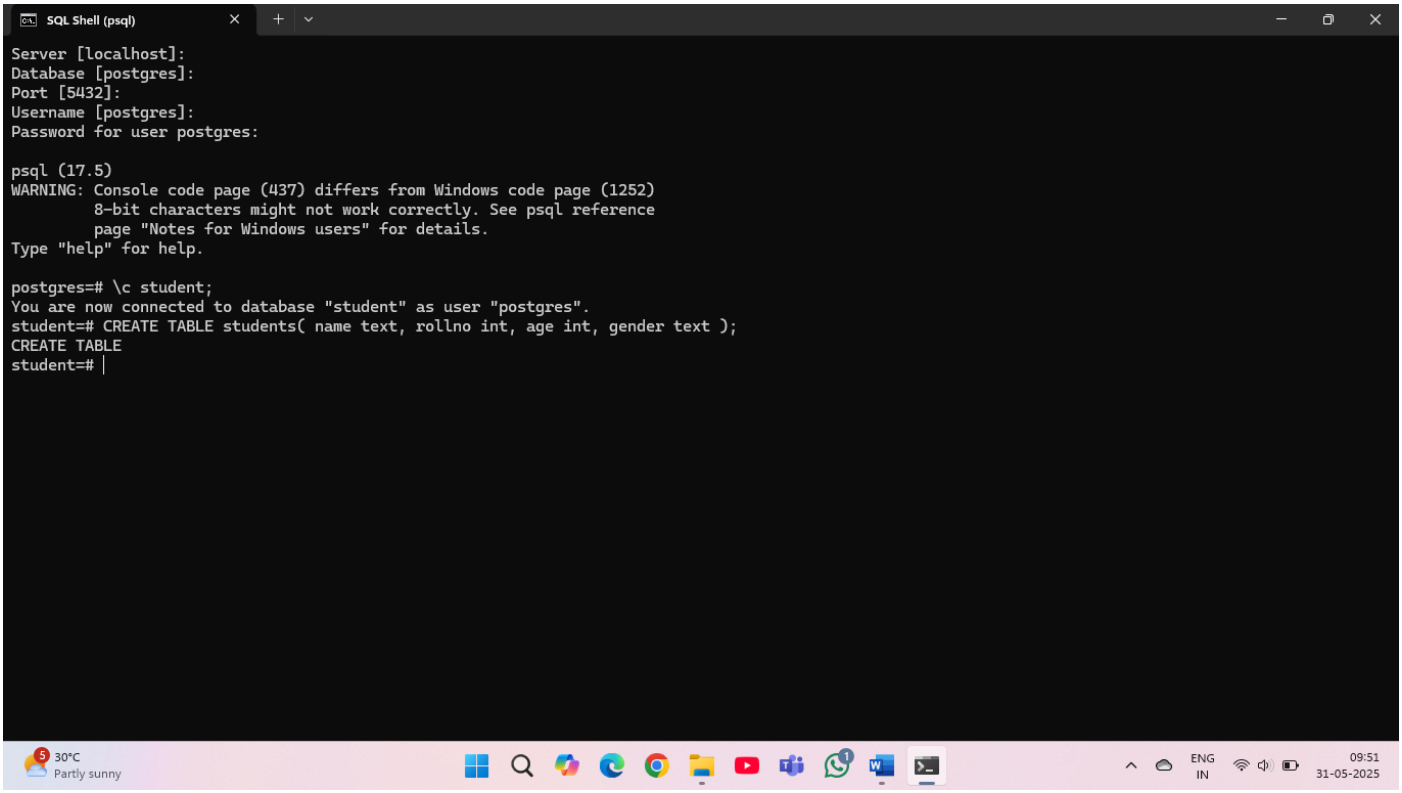


Like that.

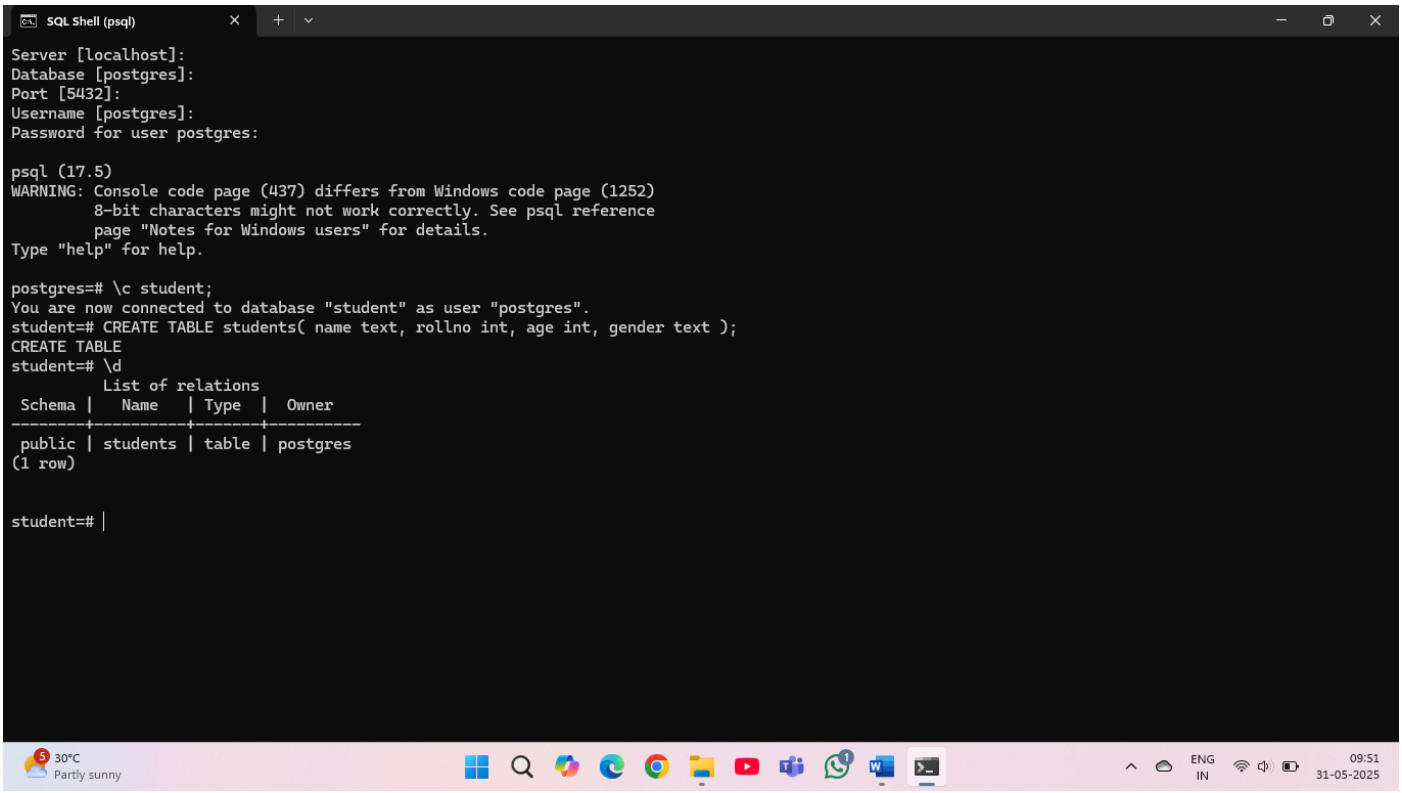
Now you see the demo database are deleted.

❖ Creating table and adding data

➢ Create a table

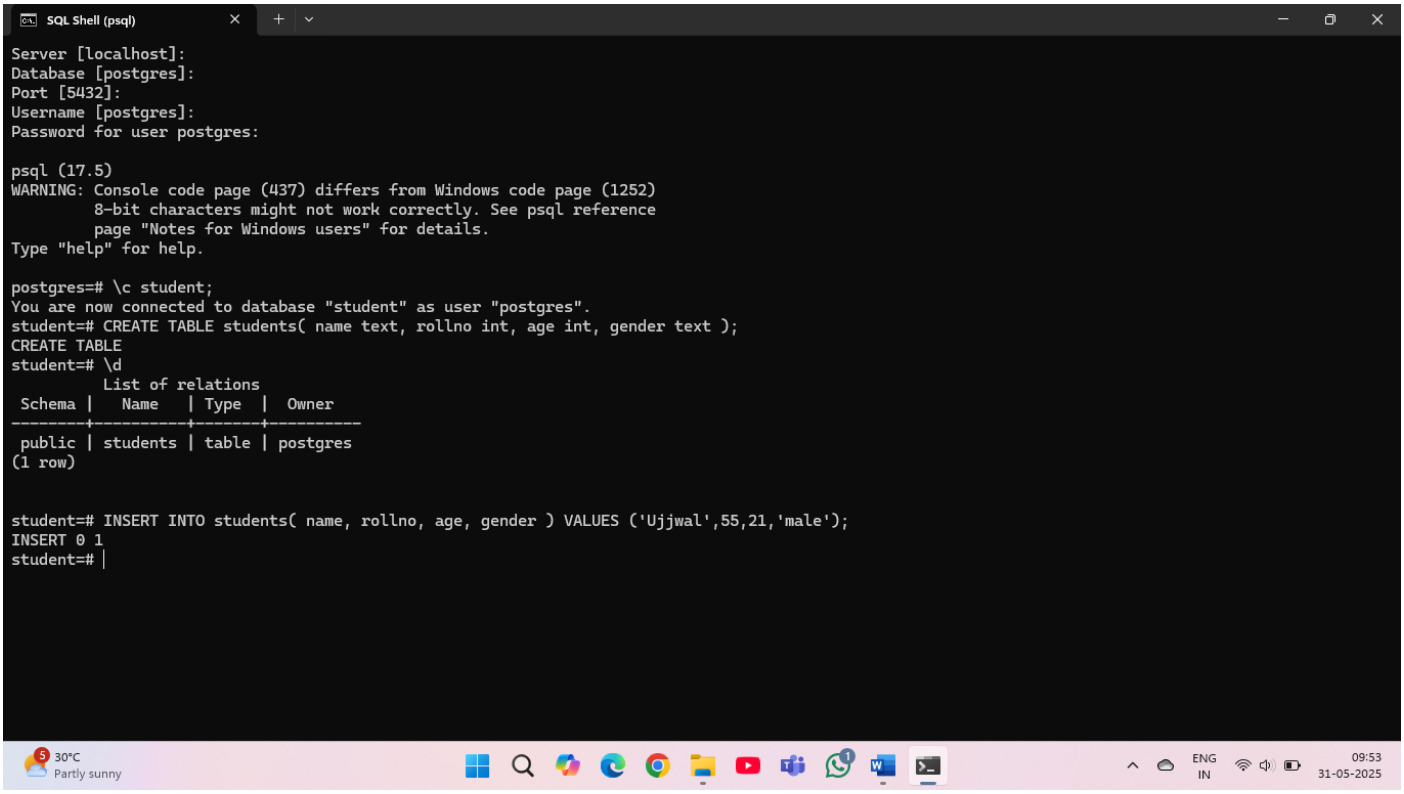


Note: and you see all the relations using this command is:

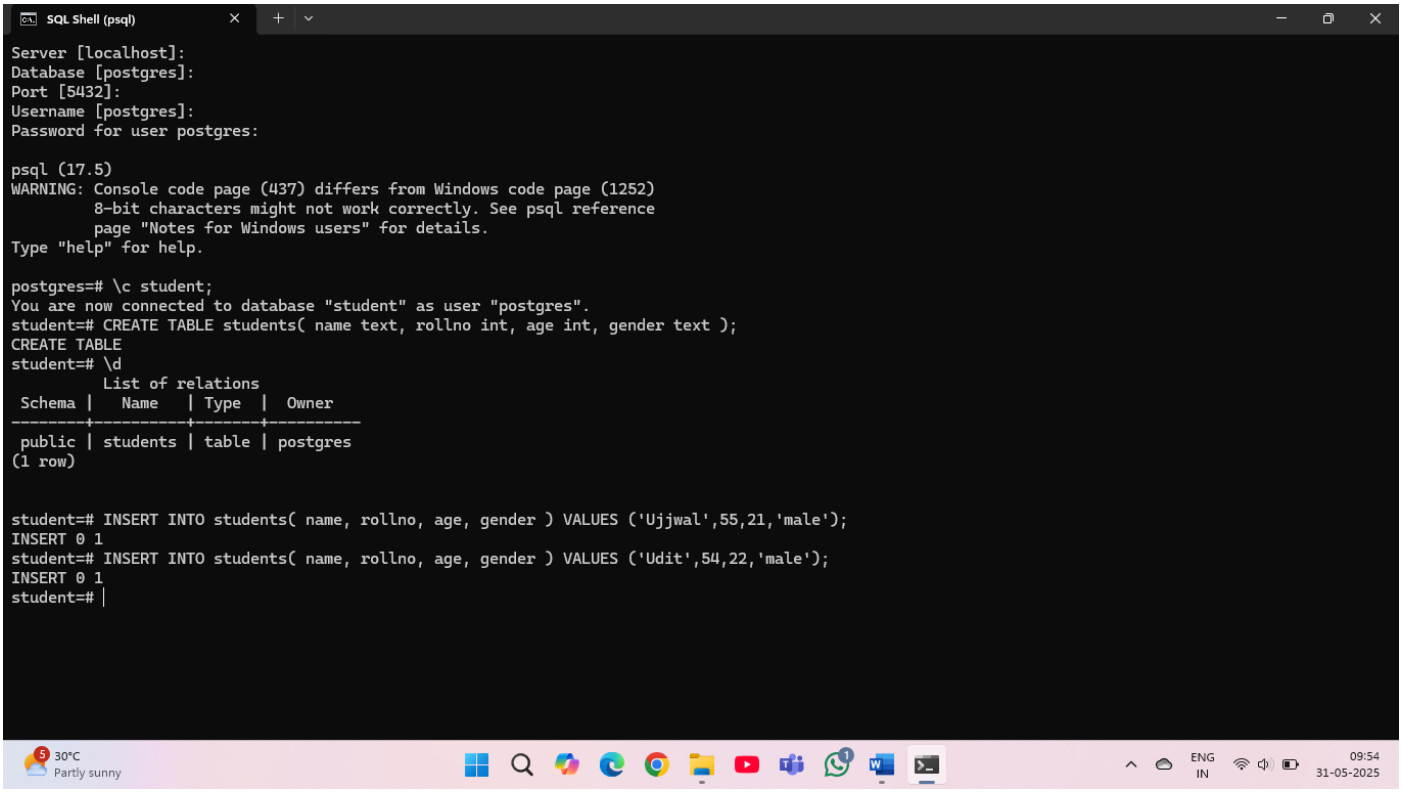


Is that.

➢ Adding data



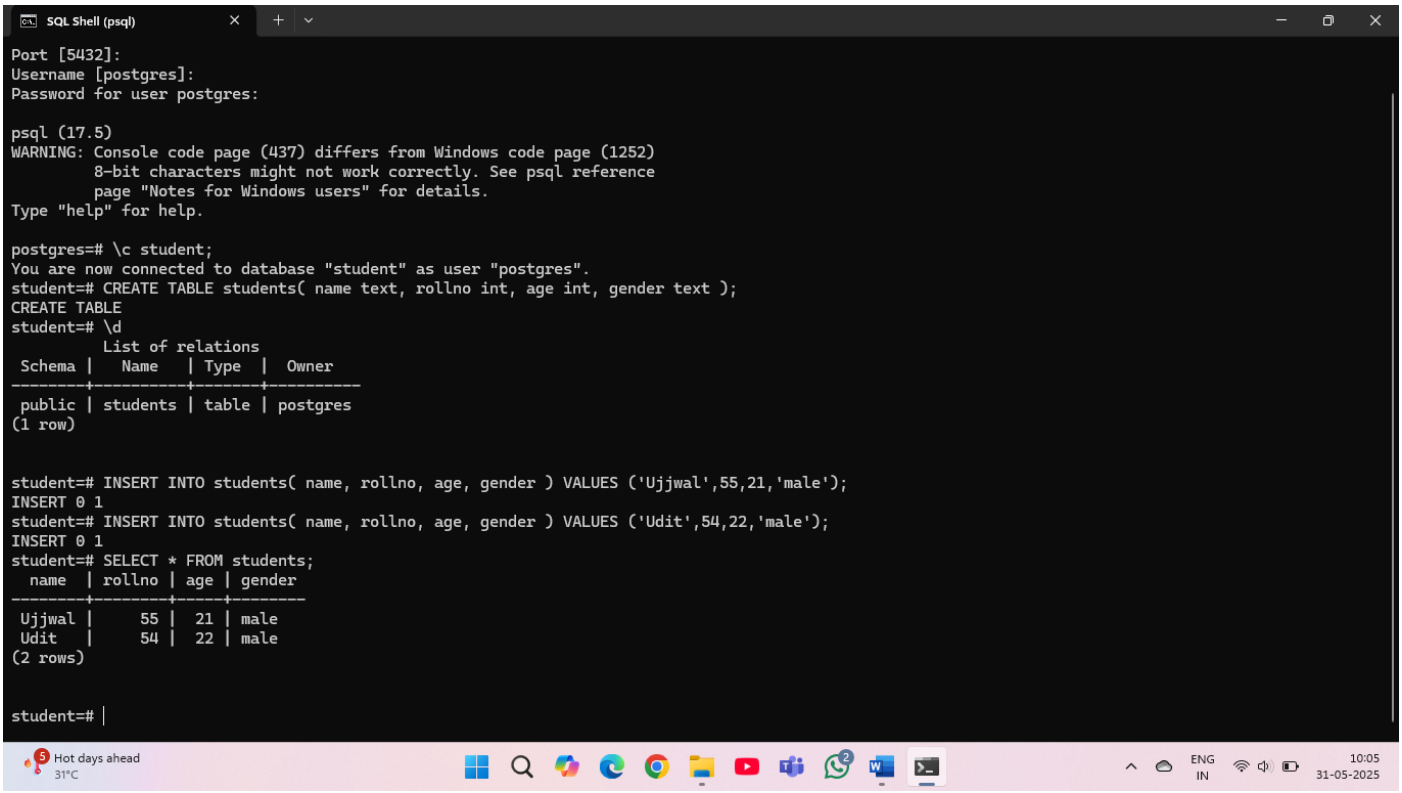
And add one more student details



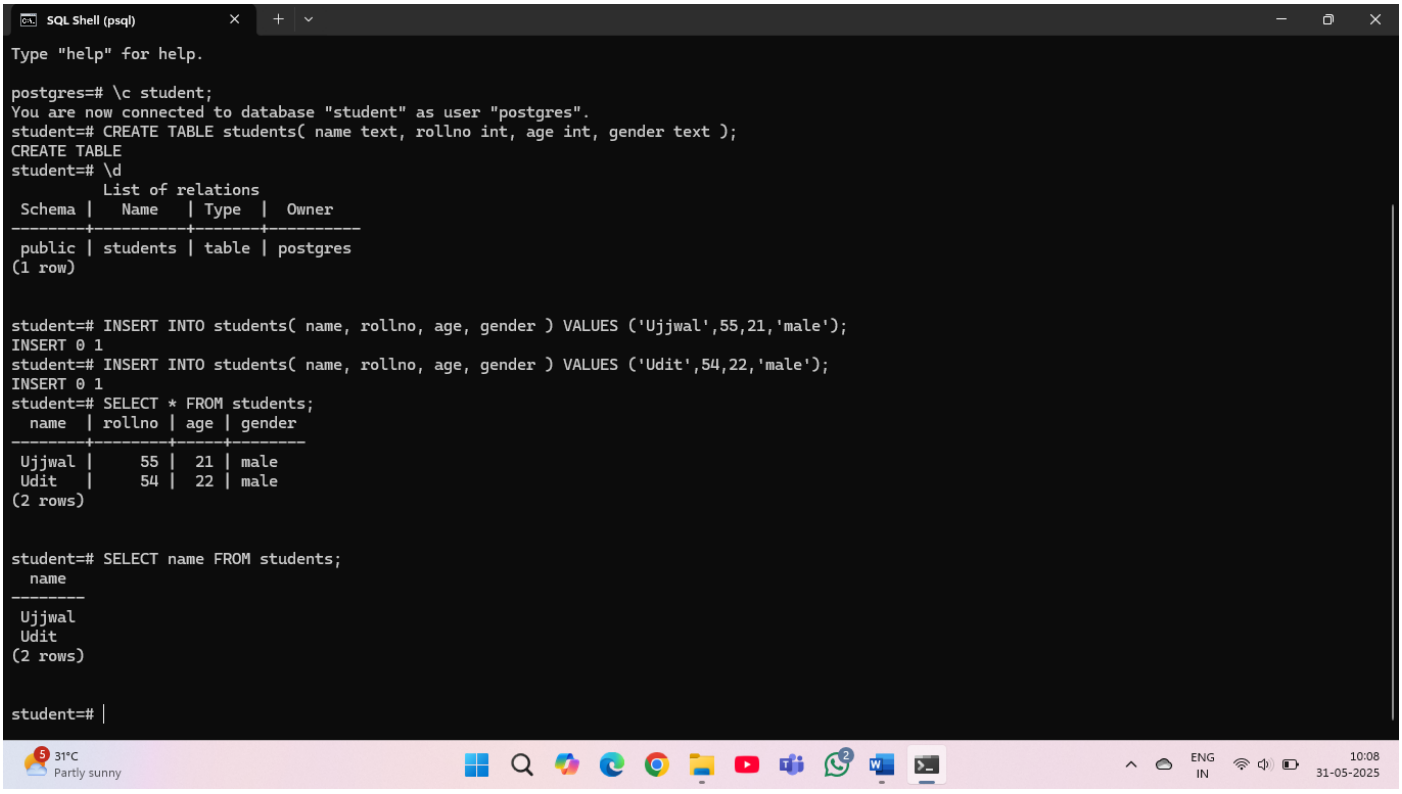
Like that.

❖ Retrieving data from database and deleting contents in the table.

to retrieve all the data from table.

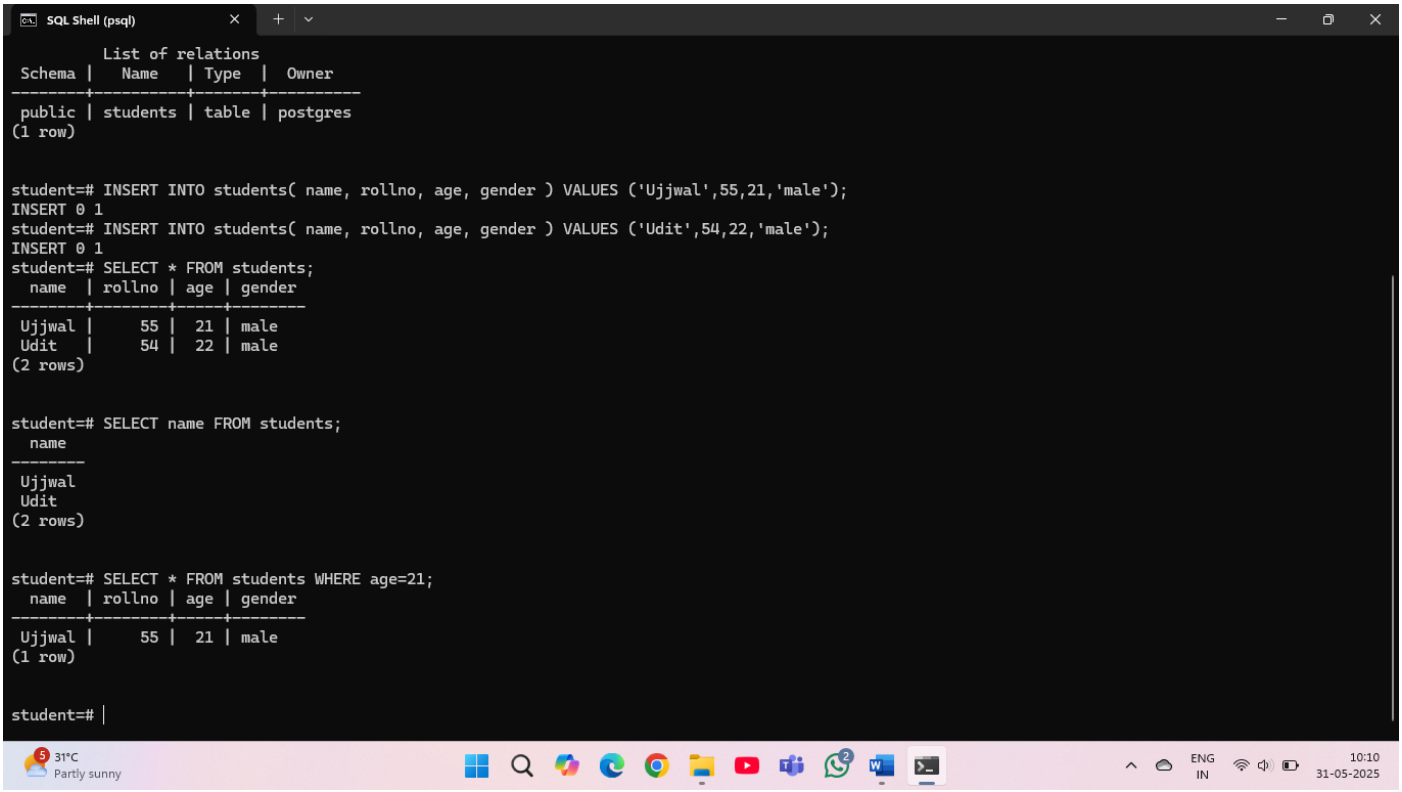


And you also retrieve a specific data form the table like only names, age, rollno,etc.



Like that.

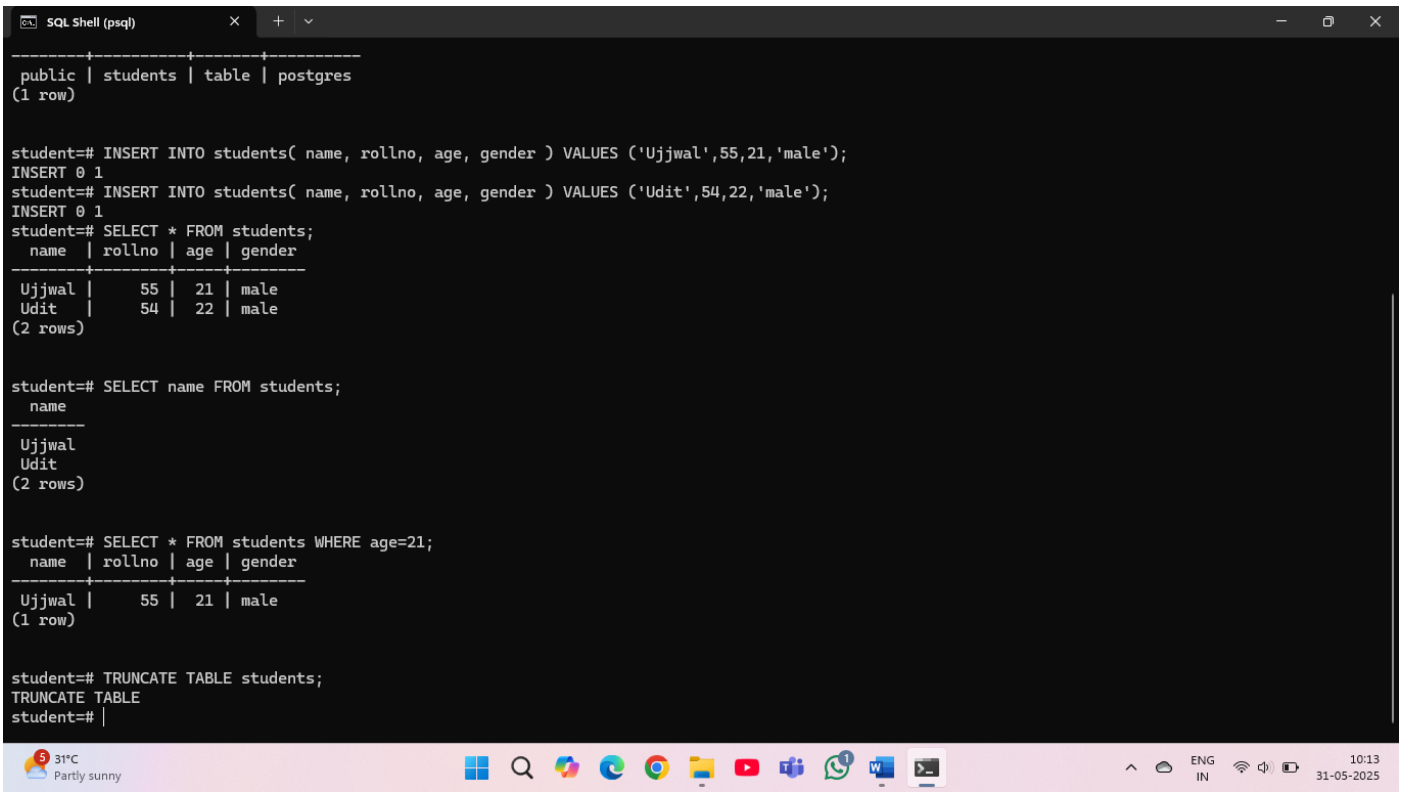
And you also perform a compare command



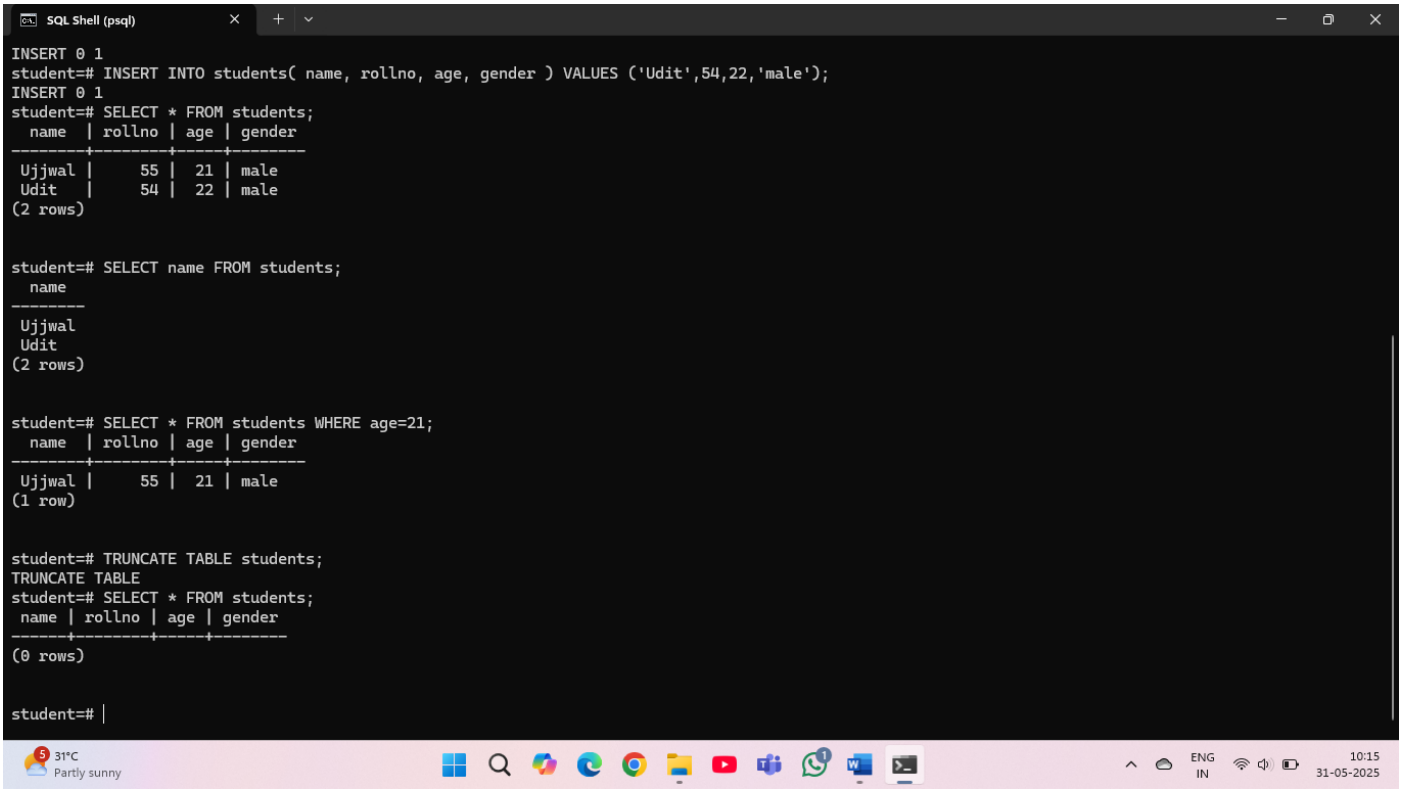
Like that and you perform many command like that.

- ❖ Delete the contents from inside the table.

Using truncate.



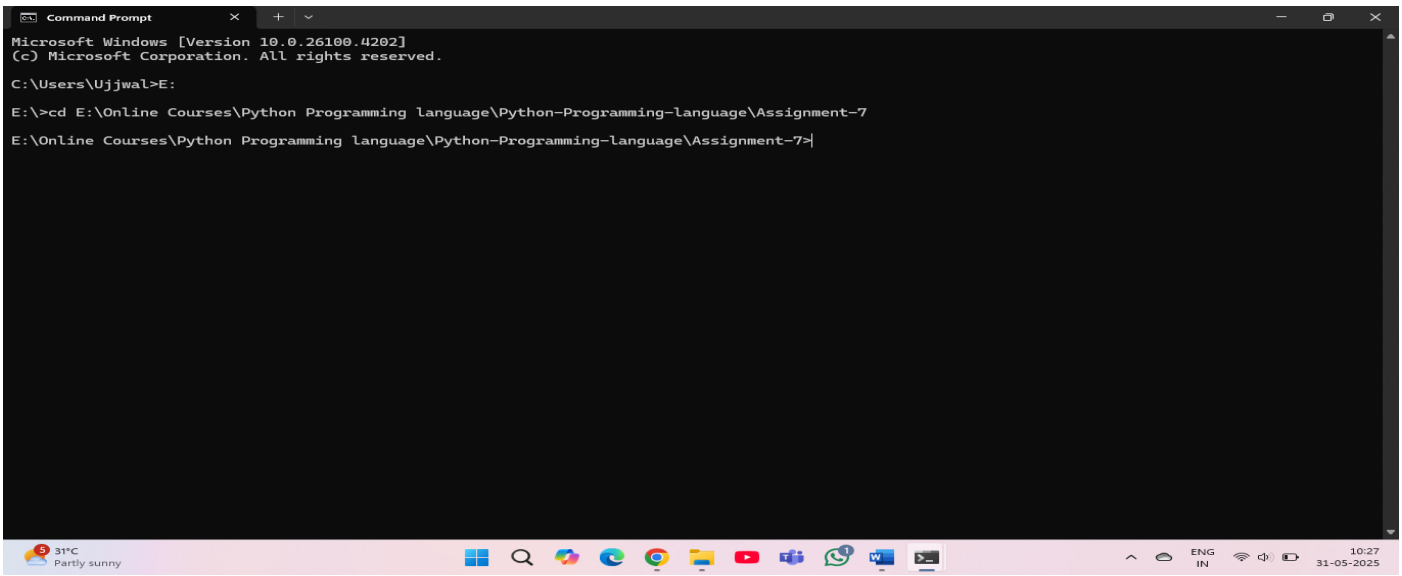
Now check the content deleted or not.



Now you see the table data has been deleted.

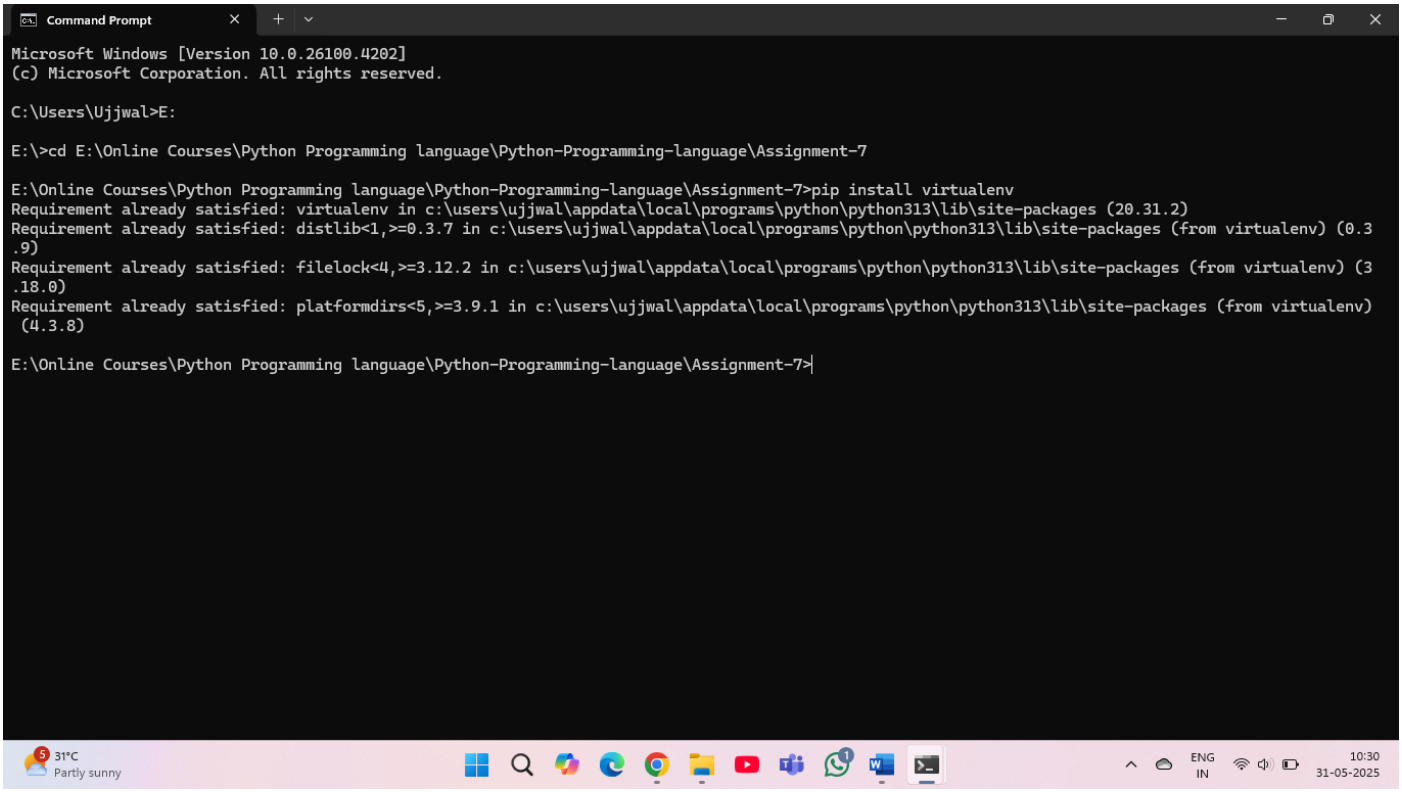
❖ Setting up virtualenv

- Virtualenv -> virtual environment
- Using vs code and command prompt
- Create a folder to you perform this task then open it to your vs code.
- And then open your command prompt (cmd) and go to your folder path(address of your folder).
- For example :



Like that it is my folder path.

- Then install pip virtualenv

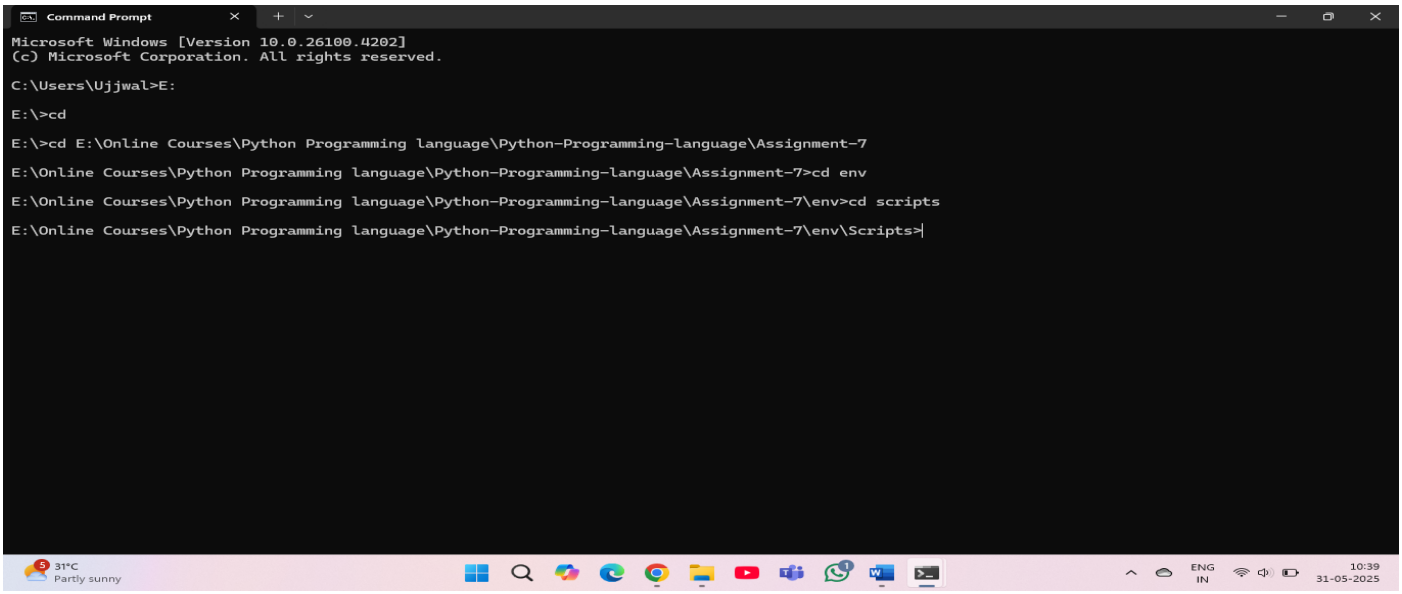


Like that I'm already installed .

➔ So you see your vs code the new folder has been created and the folder name is : env

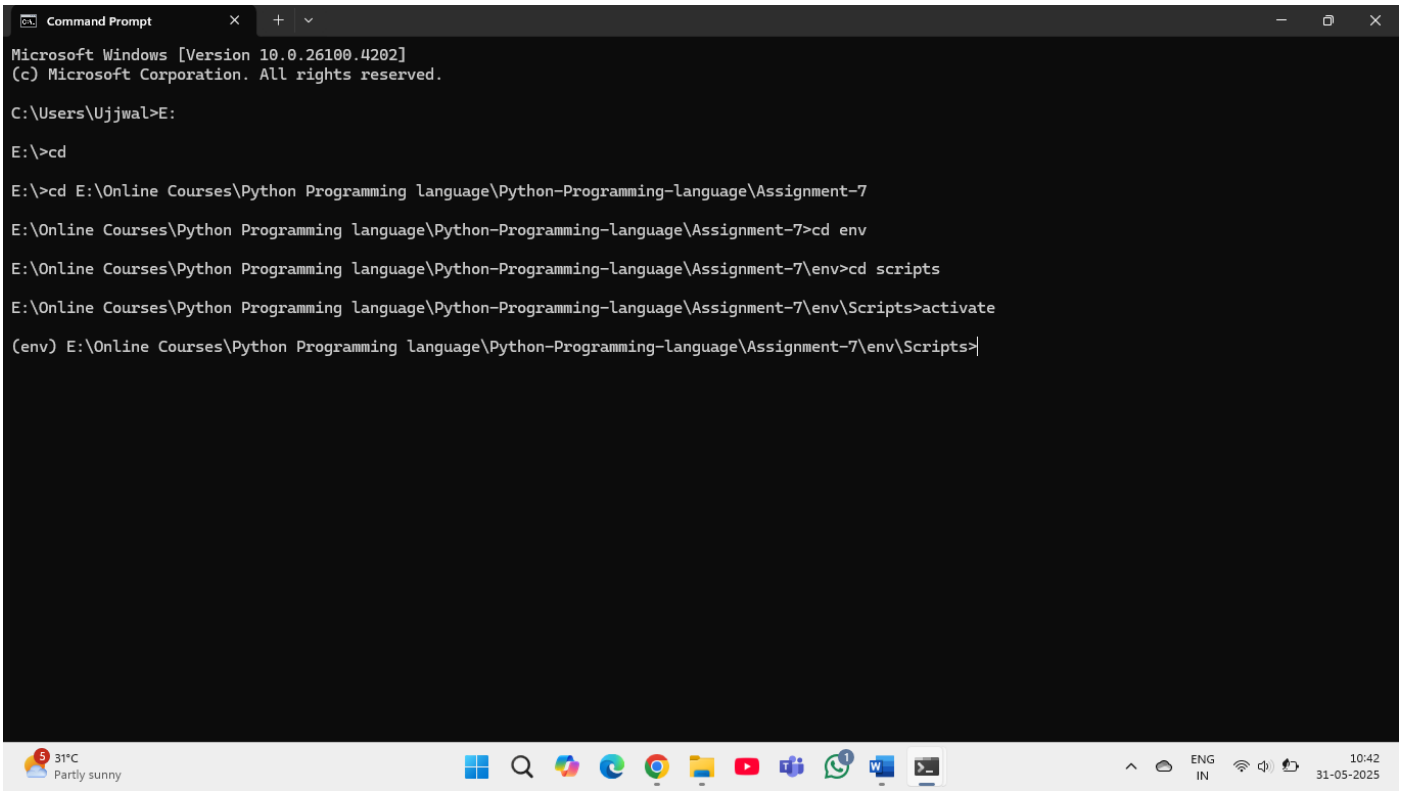
➔ Then again go to you command prompt , and open env folder using cd (change directory) and then go to scripts inside the env.

And for example : Assignment-7>env>Scripts



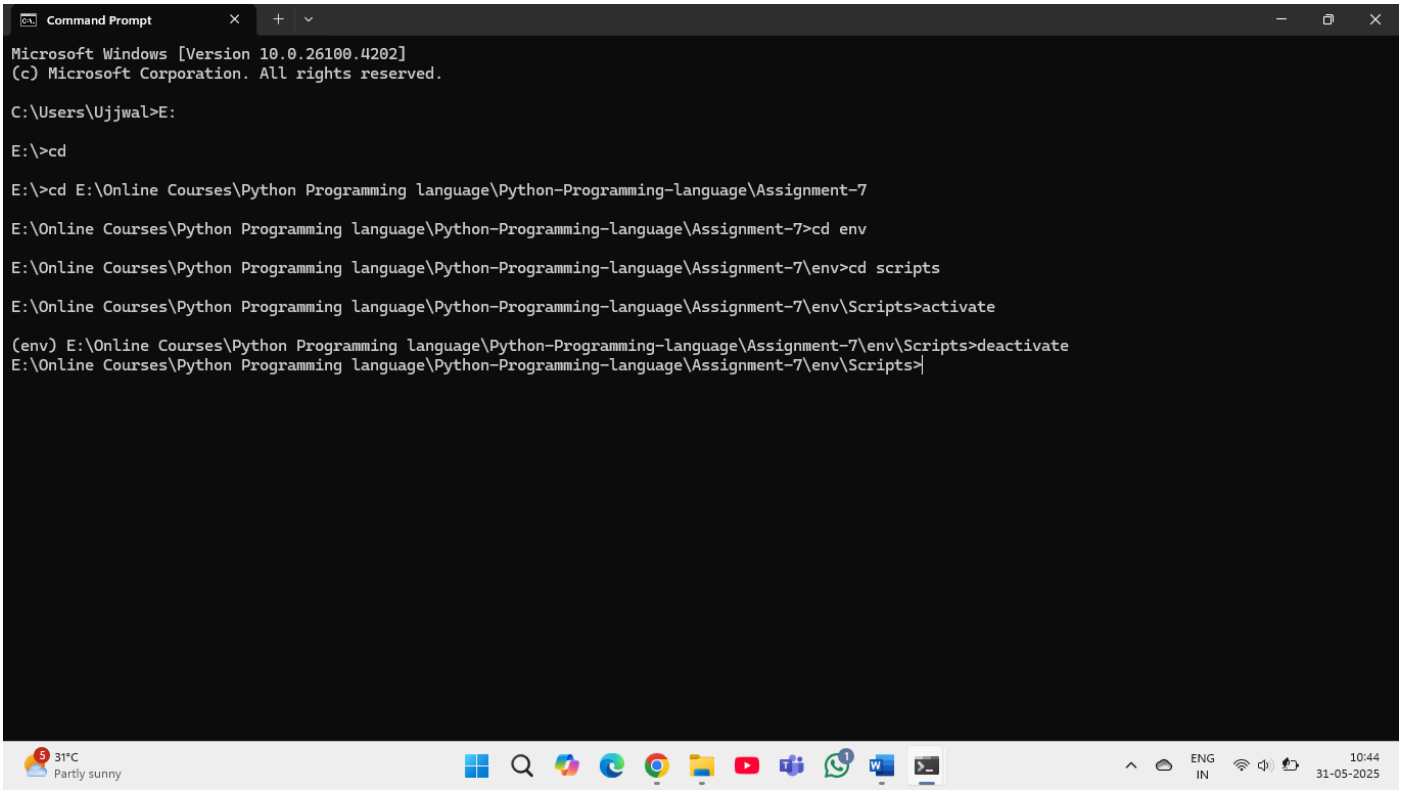
Like that.

➔ The you activate the virtualenv



Now you see the virtualenv has been activated

➔ And the your task has been done then you deactivate the virtualenv



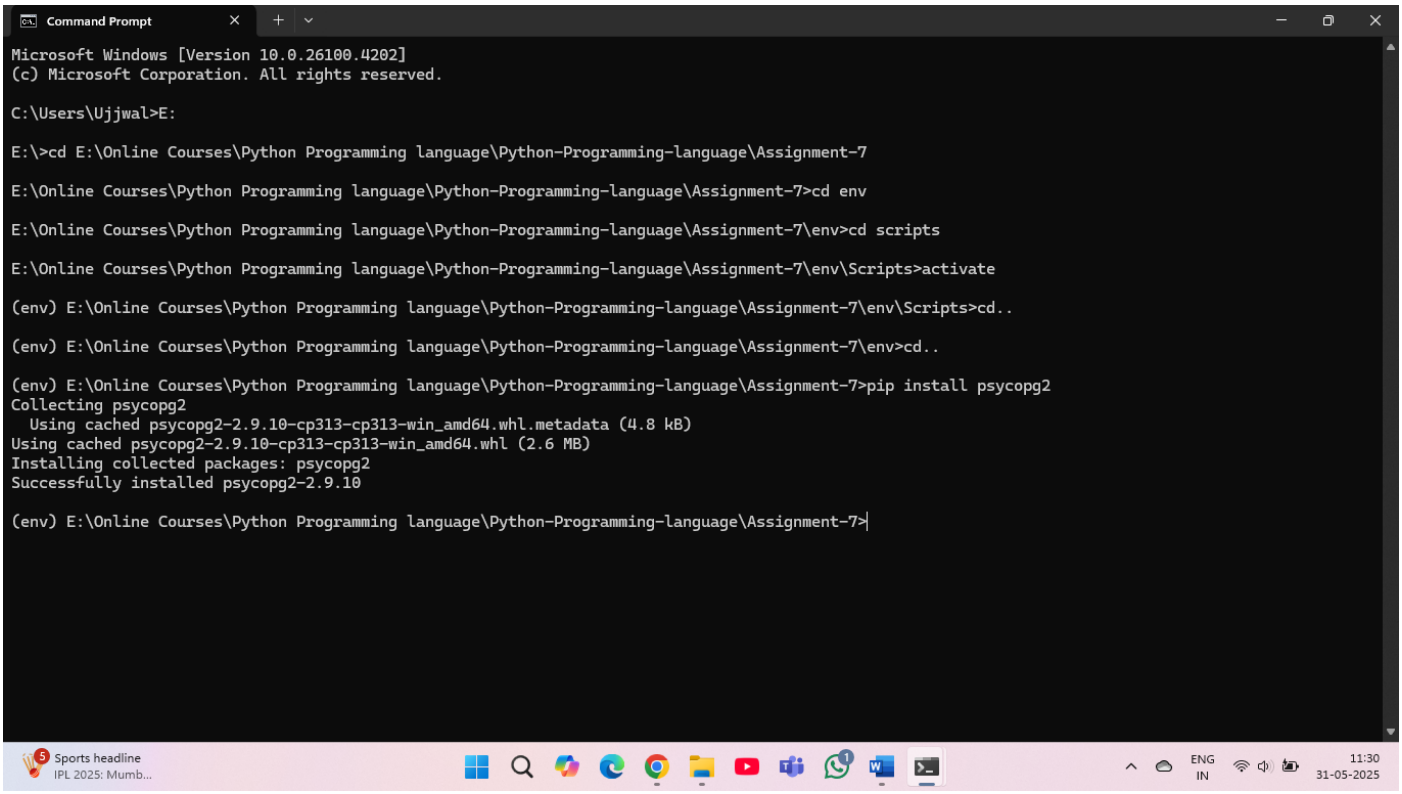
Like that.

❖ Installing psycopg2

➔ To help the python and the Postgres database to communicate.

➔ To install package ofpsycopg2

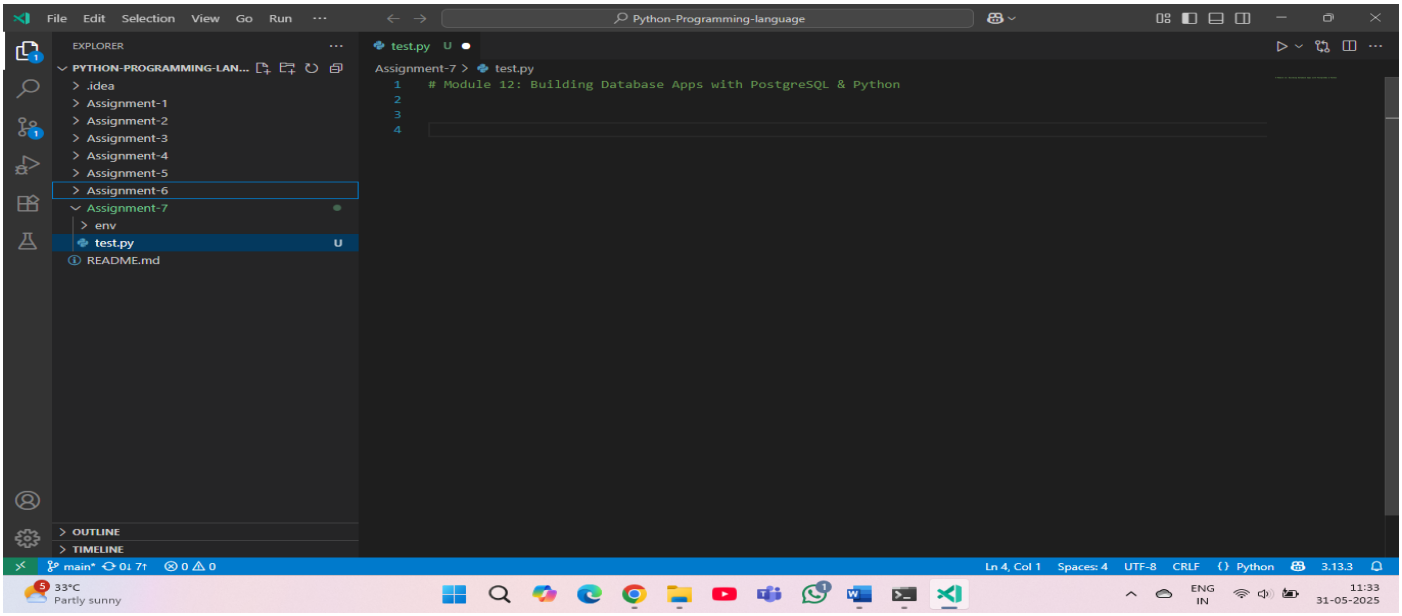
➔ For example: pip install psycopg2



Like that.

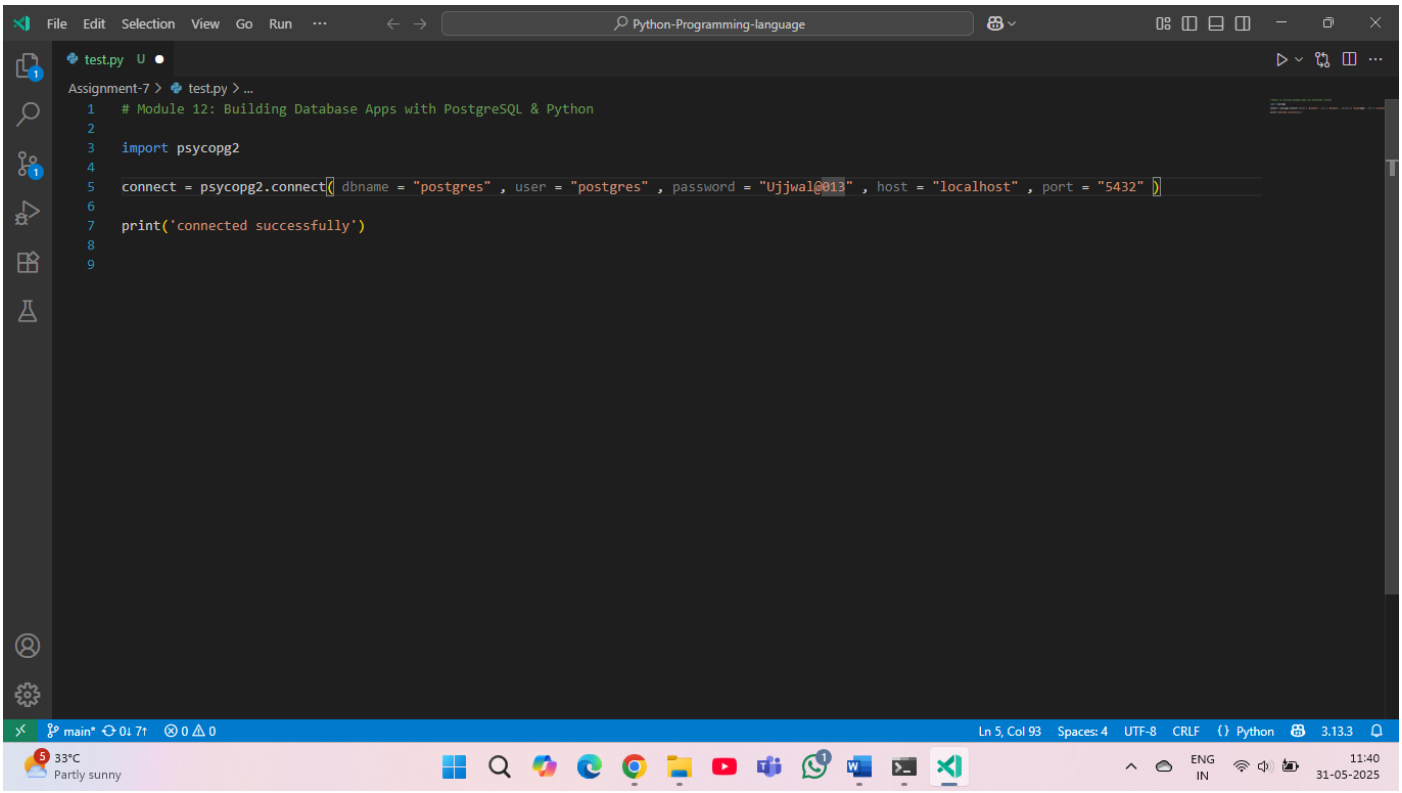
❖ Connection to the database

➔ Open vs code # file name for example , test.py



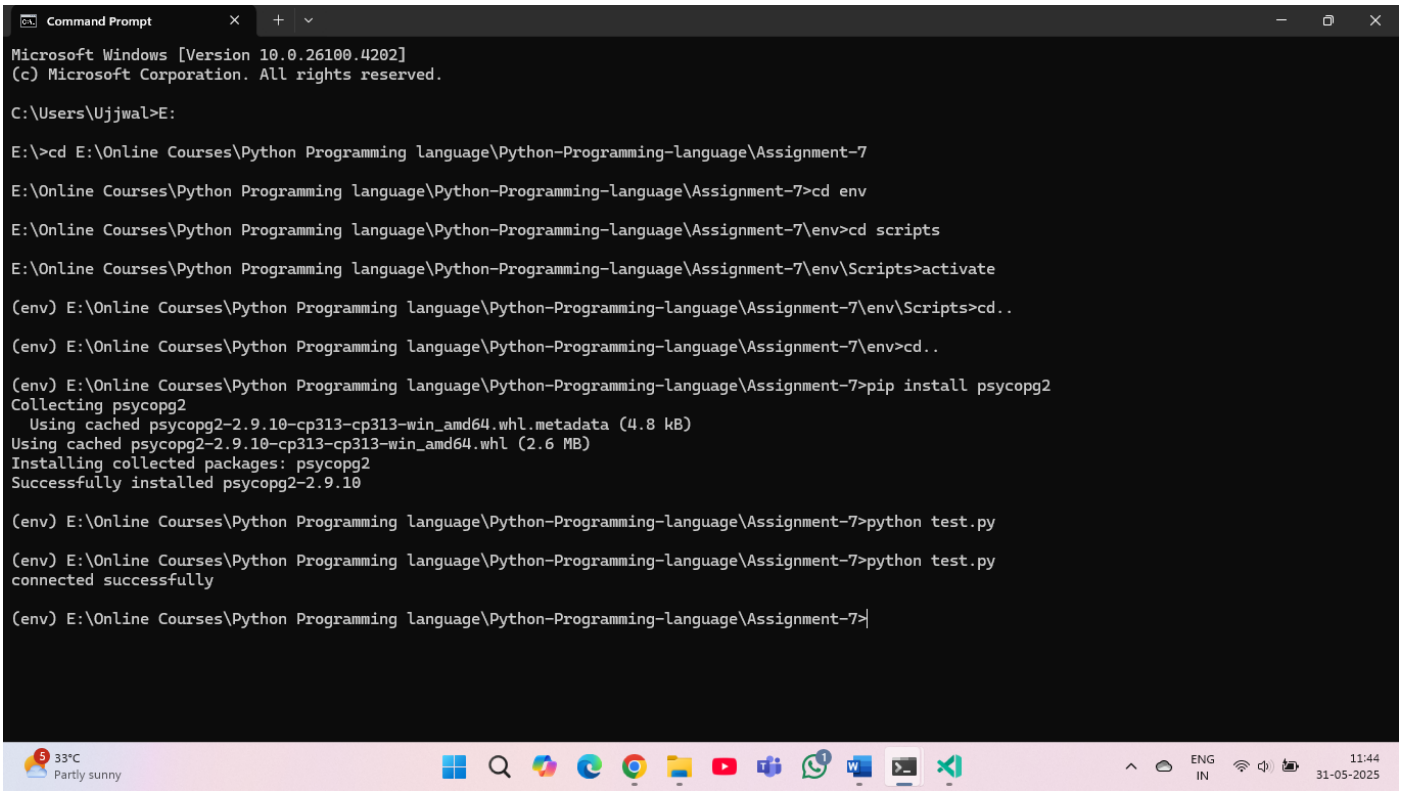
Like that.

➔ Connect to database



Like that.

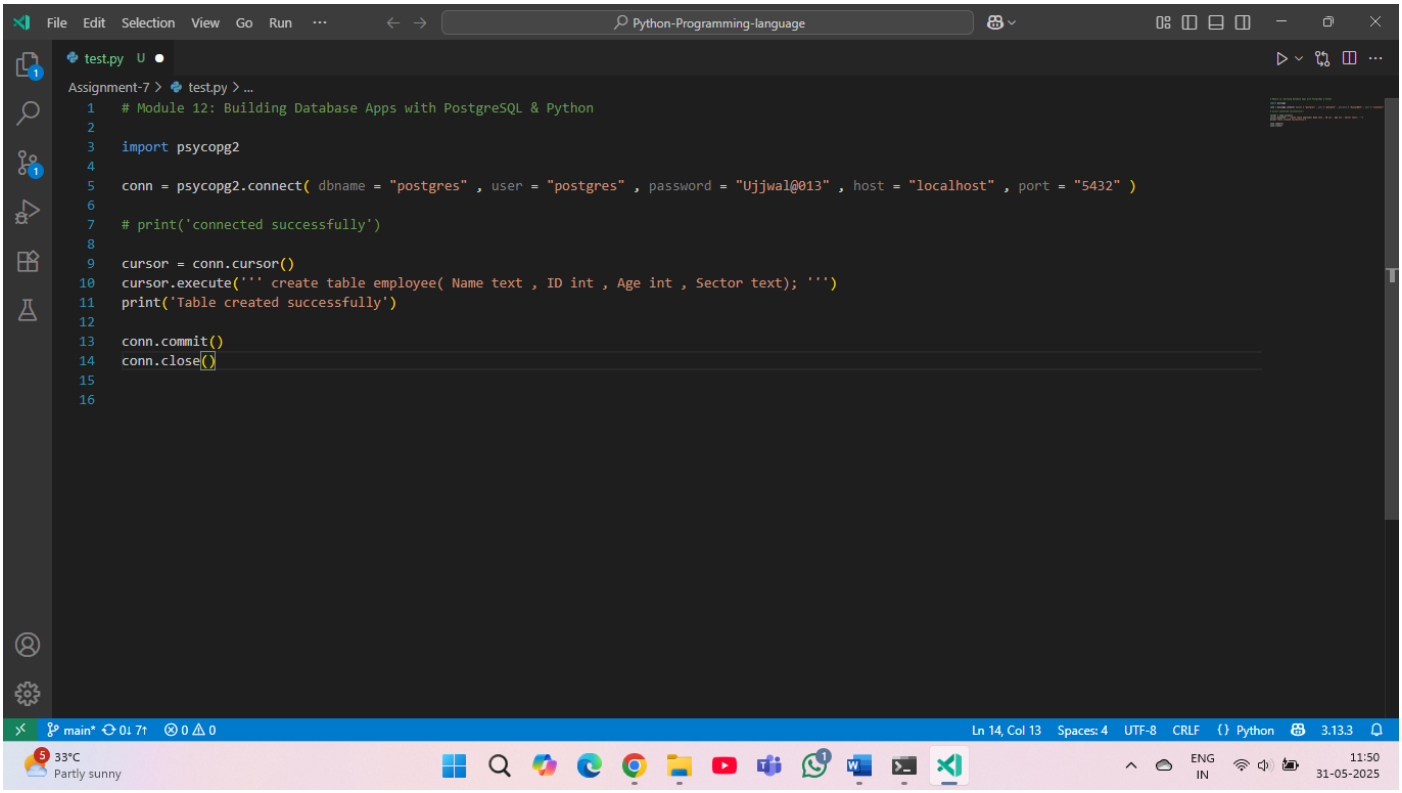
➔ Then open command prompt and virtualenv has been activated then execute the code.



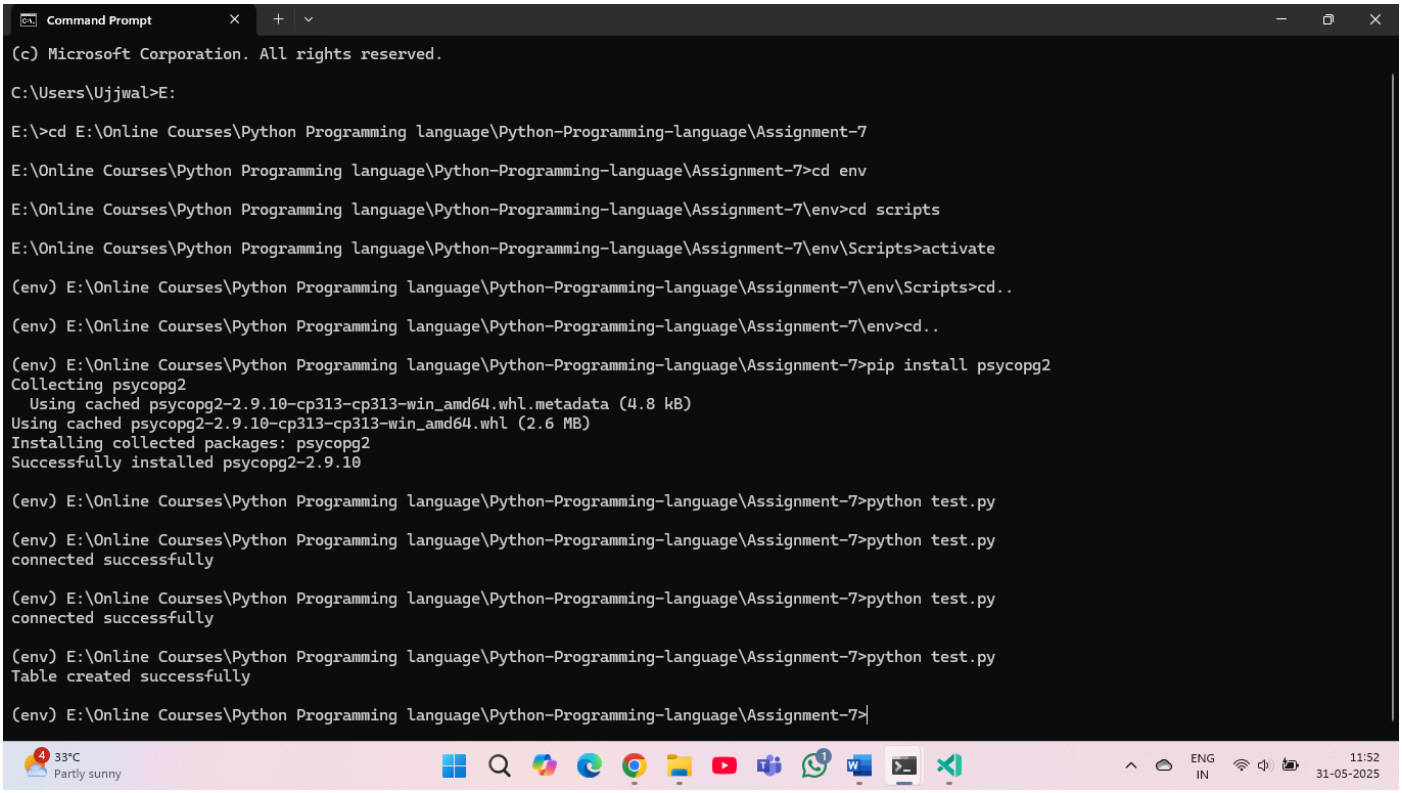
Like that.

❖ Creating table using python

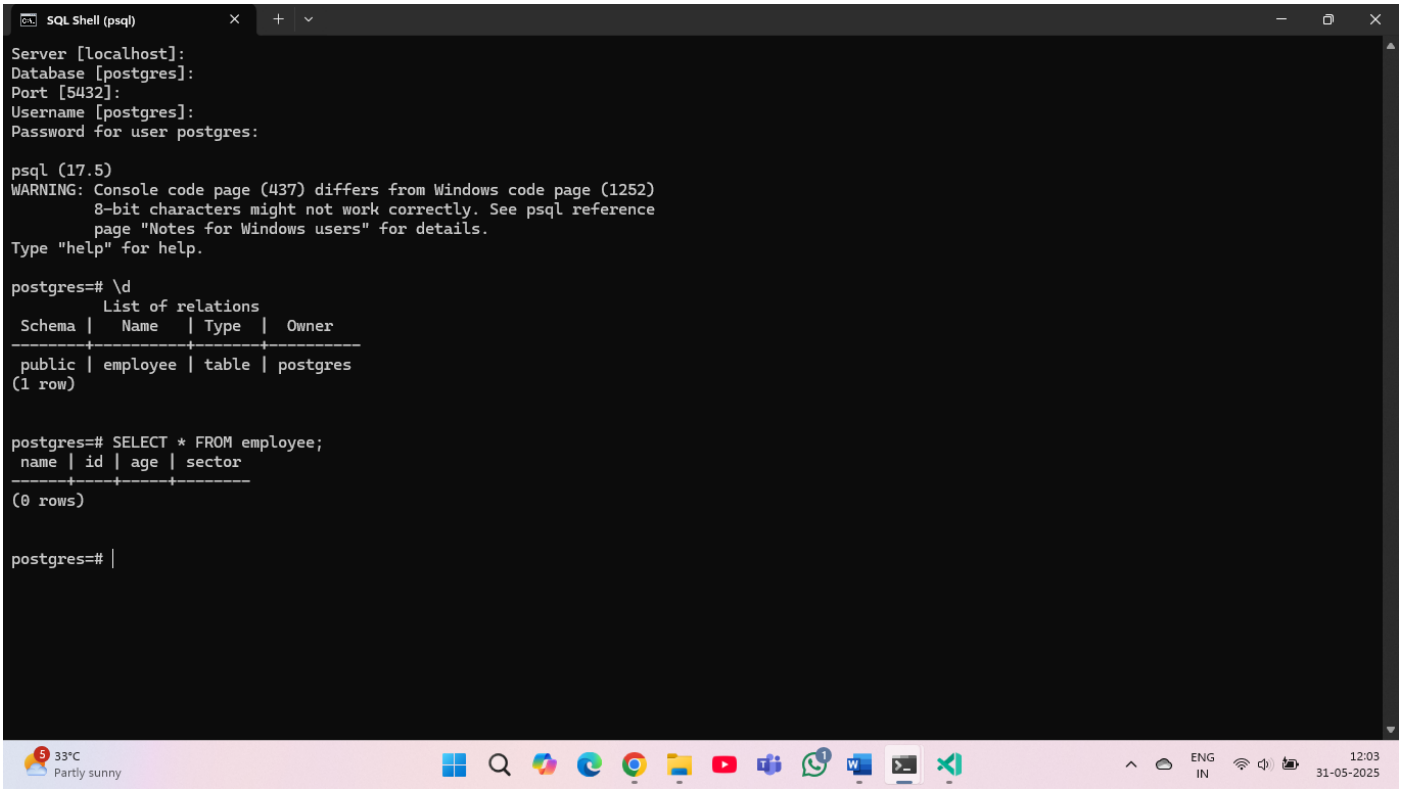
Eg ->



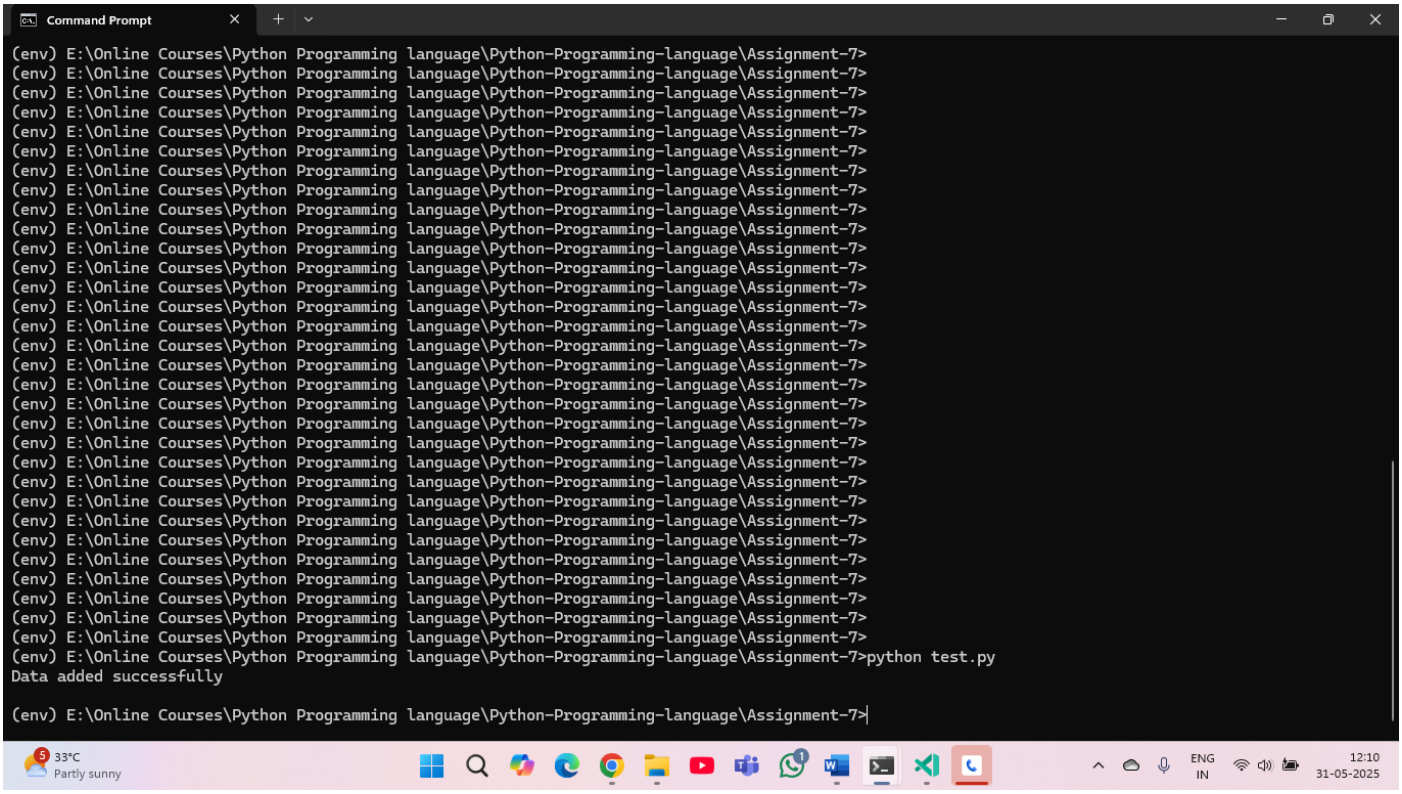
Like that then the output is :



Like that. Then check to psql shell

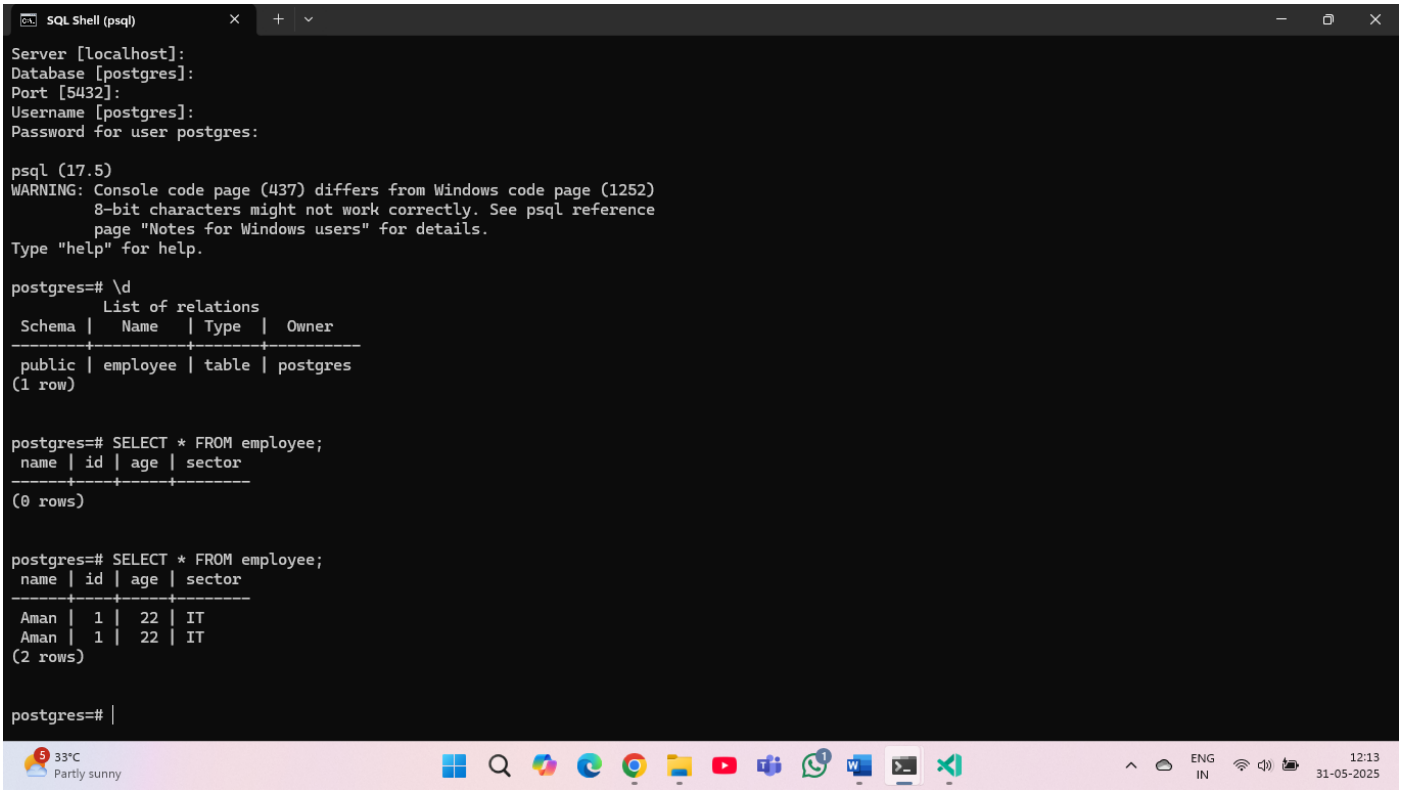


➔ Inserting the data using python



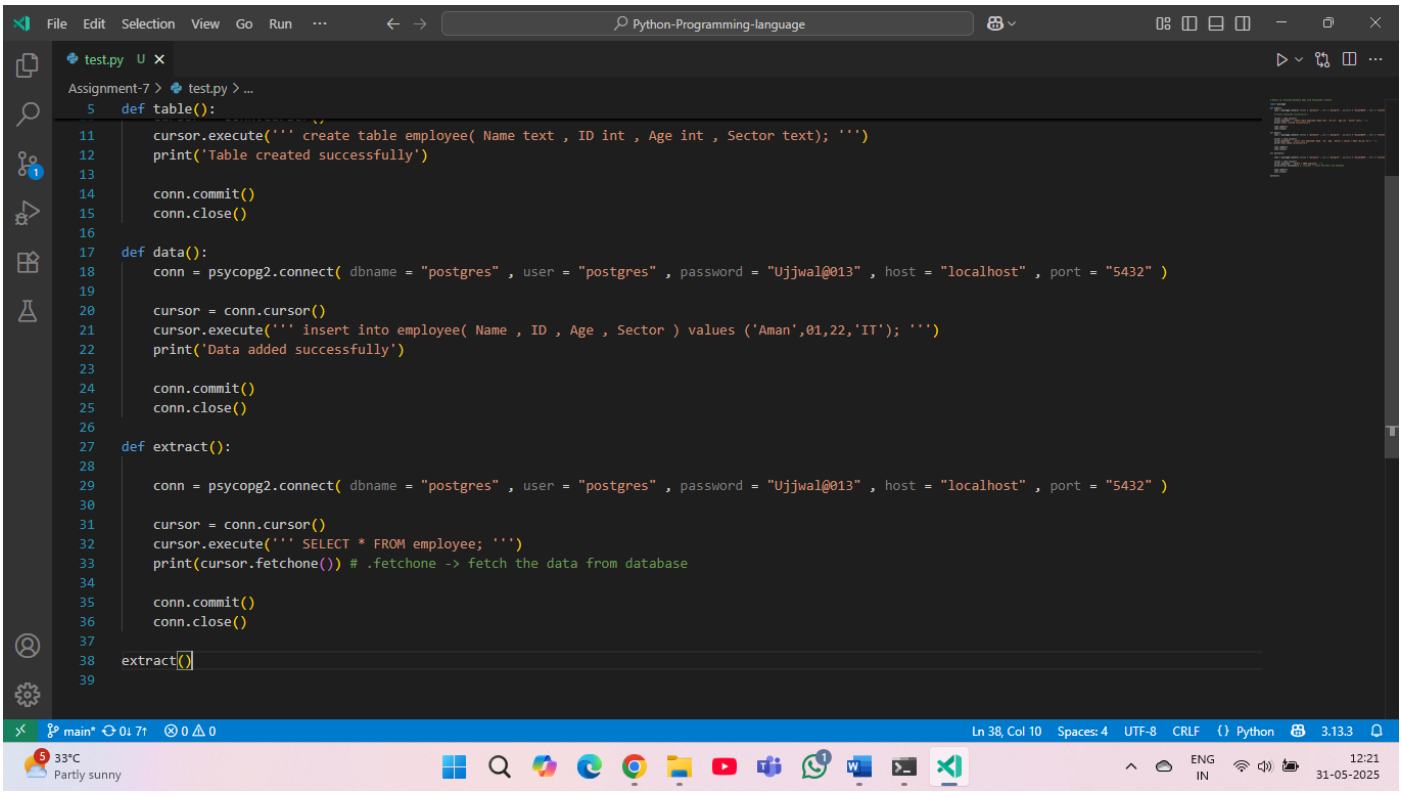
Like that

➔ then check to psql shell



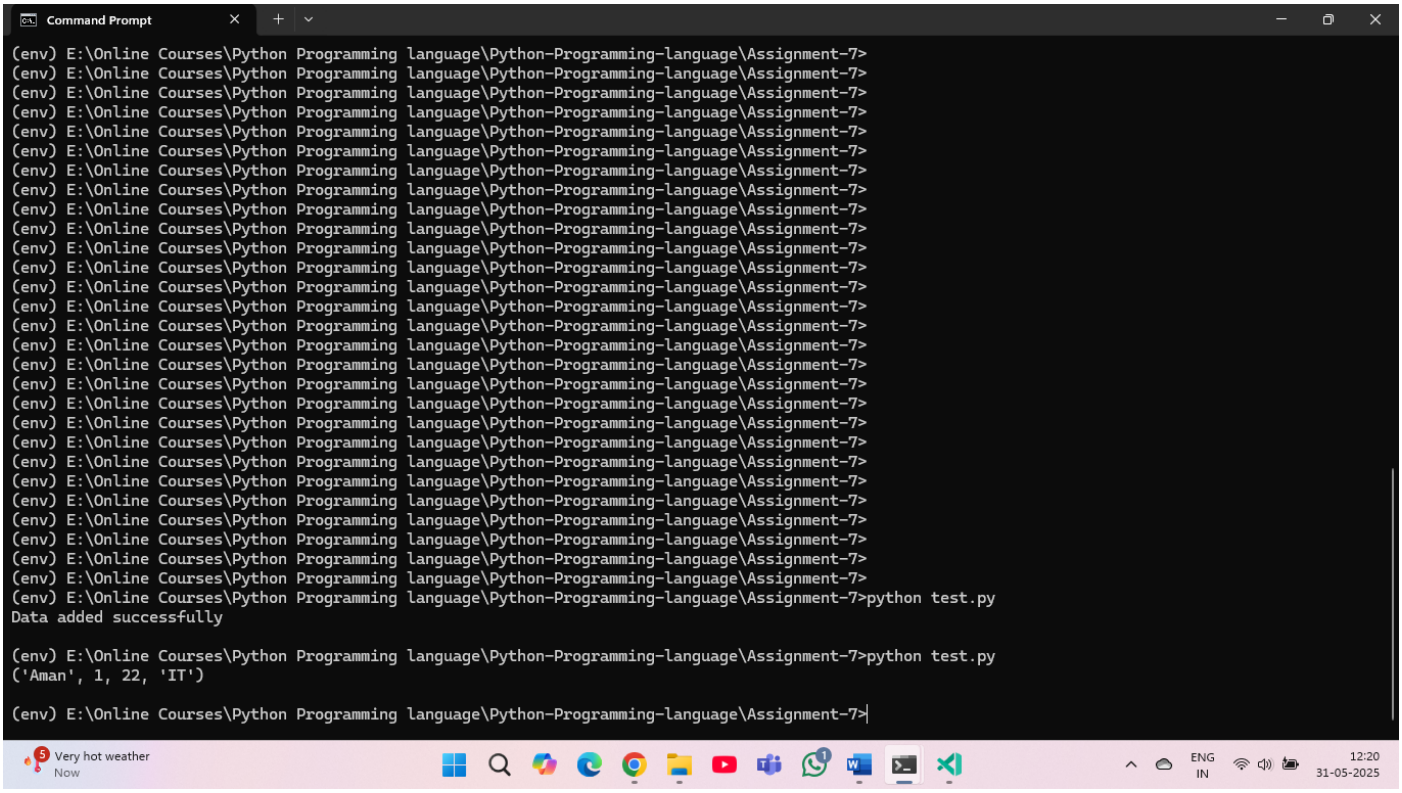
Like that.

❖ Extracting the data from the database



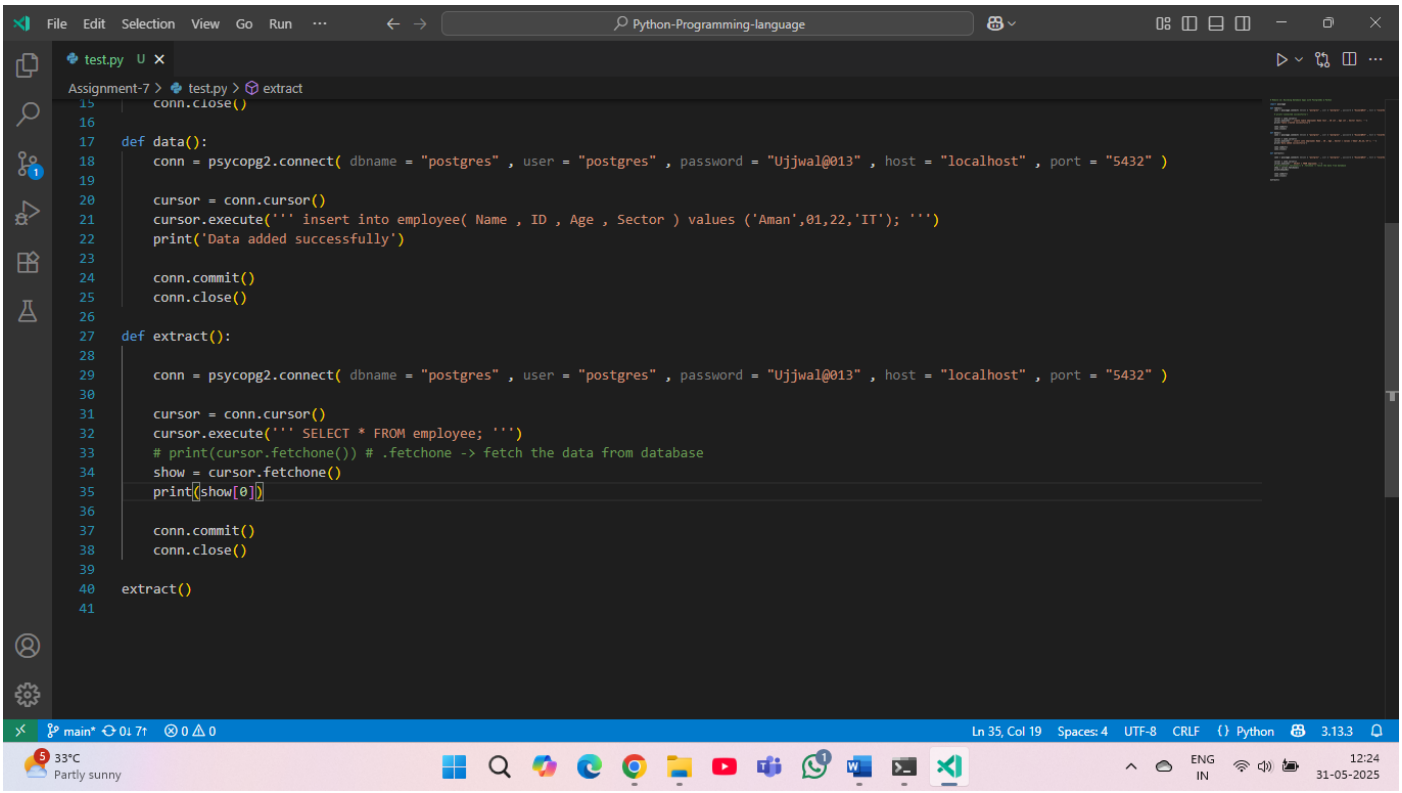
Like that

And the output is:



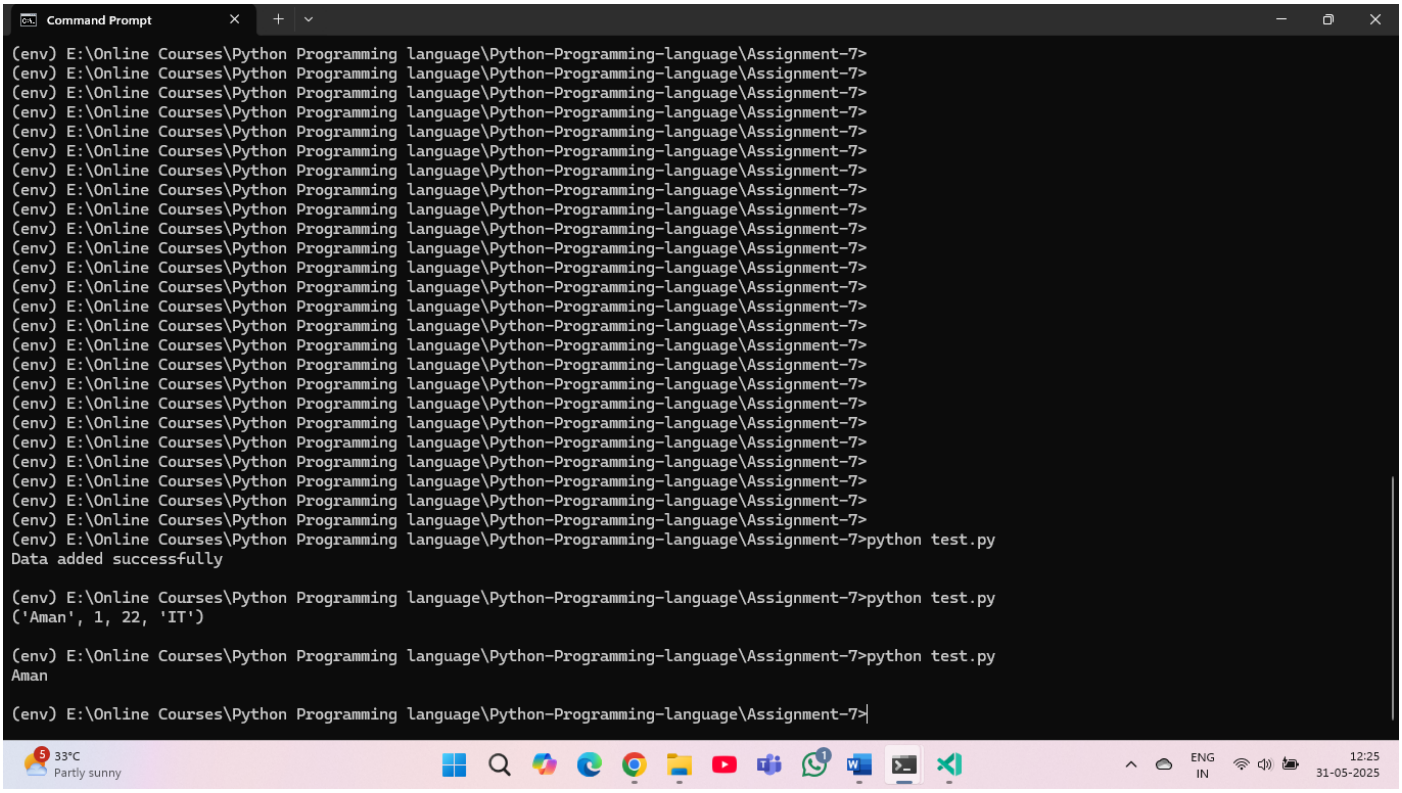
Like that.

And one more a function that you fetch a single value from the database



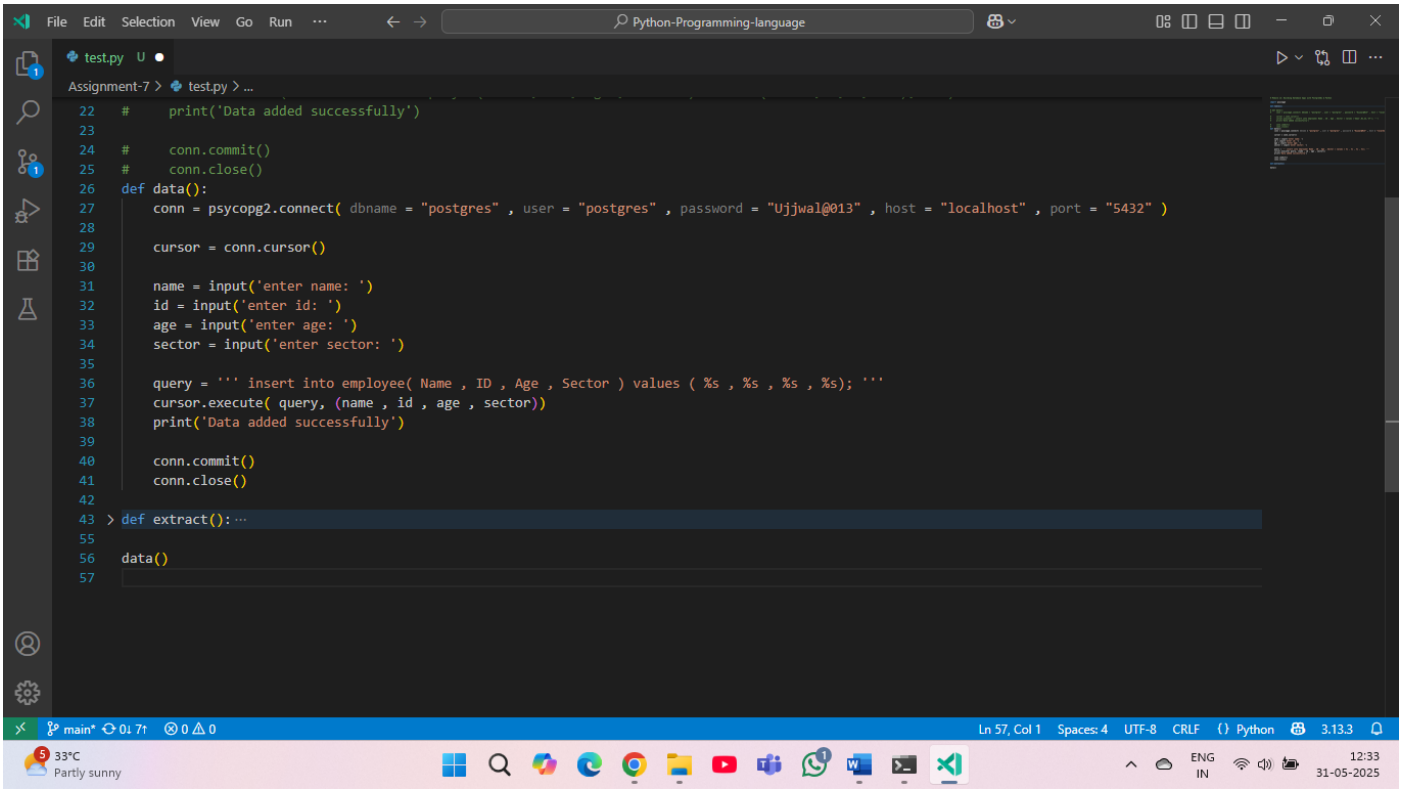
Like that.

And the output is:



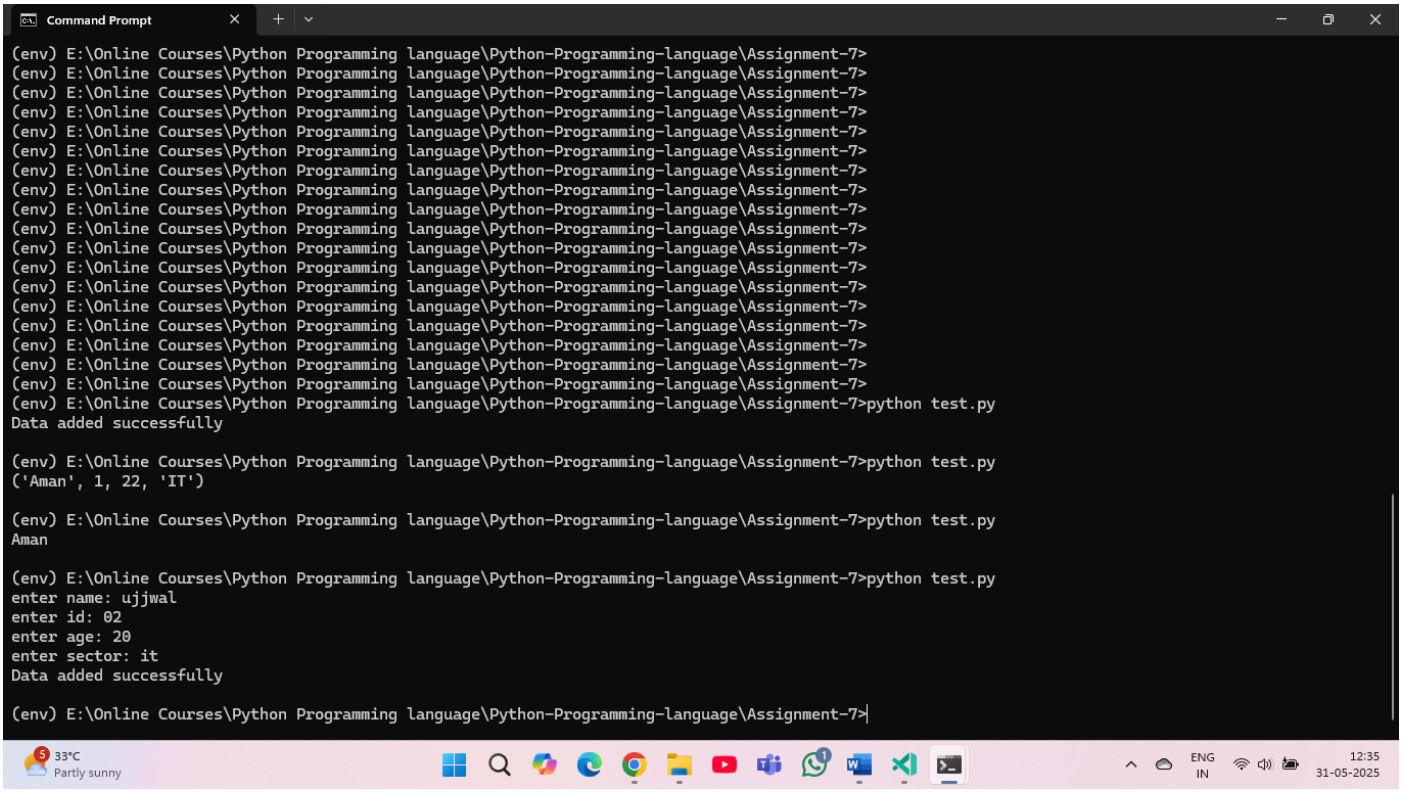
Like that.

❖ Adding the input from the user



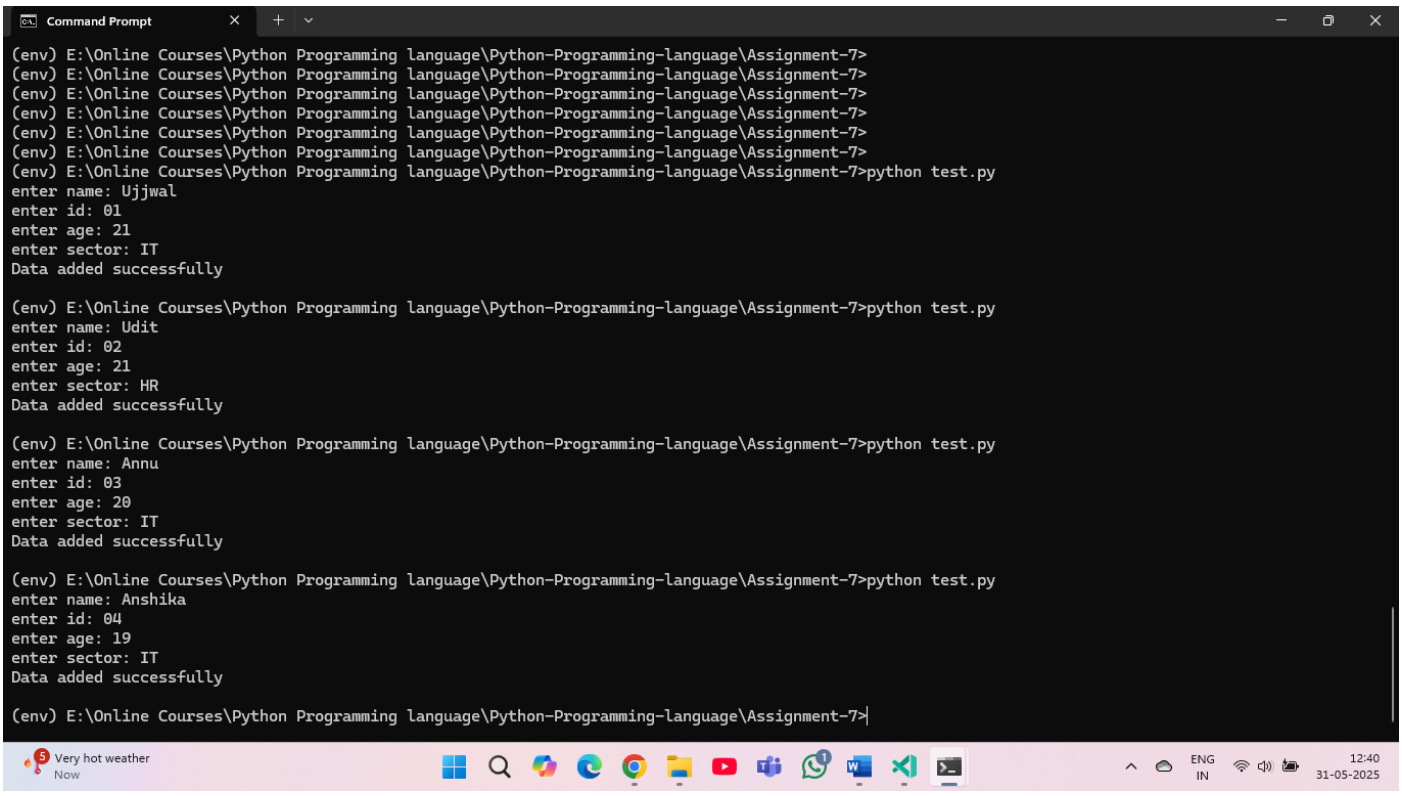
Like that.

And the output is:



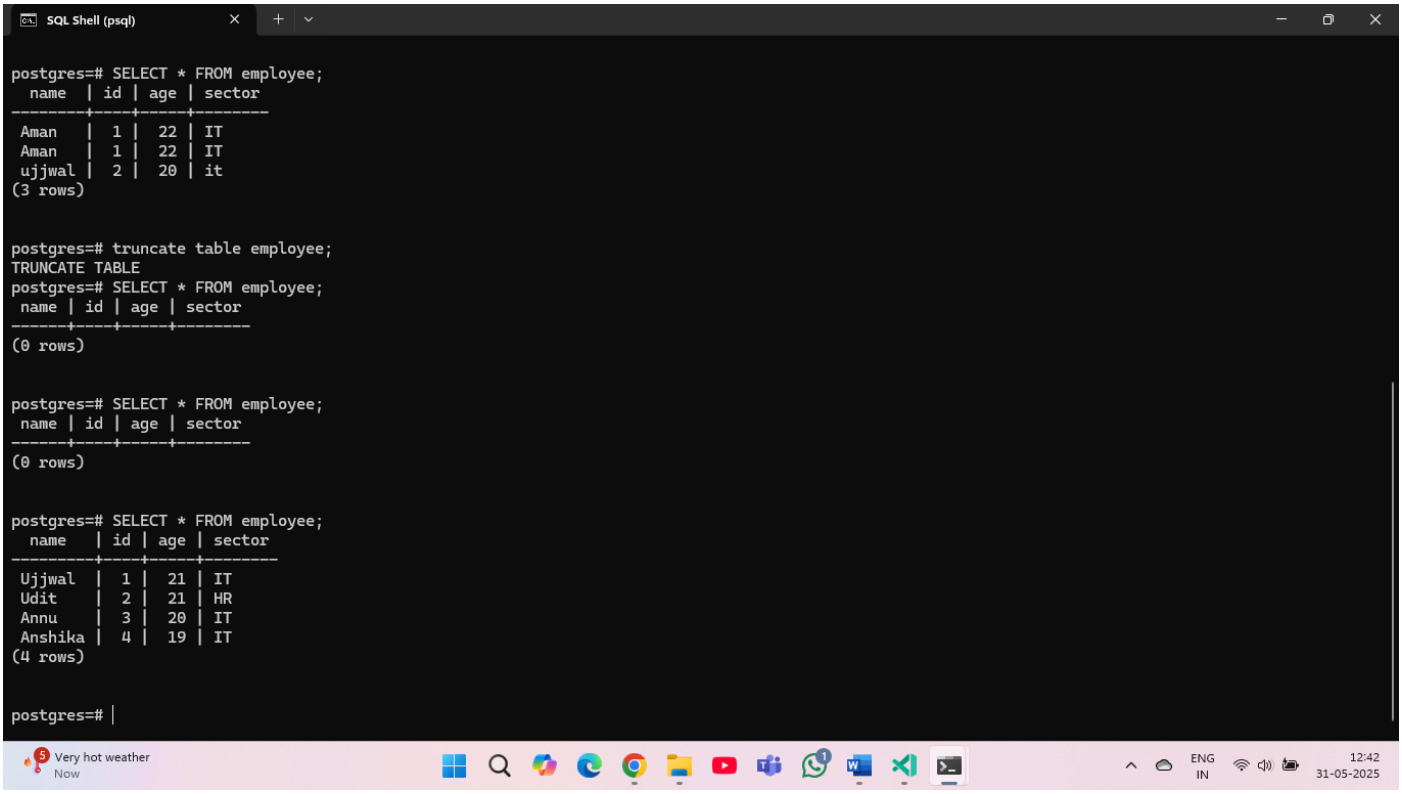
Like that….

Now for example : add some employee information



Like that

Now see the data from psql shell



Now you see all the employee information.

Thank you ….

Author -> Ujjwal