

1- Find available databases using “\l” command

```
SQL Shell (psql)
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
psql (17.4)
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=# \l

      List of databases

```

Name	Owner	Encoding	Locale Provider	Collate	Ctype	Locale	ICU Rules	Access privileges
postgres	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			
template0	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			=c/postgres + postgres=Ctc/postgres
template1	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			=c/postgres + postgres=Ctc/postgres

```
(3 rows)

postgres=# |
```

- 2- Create new database using command “CREATE DATABASE demodb;”

```
SQL Shell (psql)
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
psql (17.4)
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=# \l
      List of databases
  Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
 postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
 template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=CTc/postgres +
 template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
          |          |          |          |          |          |  |  | postgres=CTc/postgres
(3 rows)

postgres=# CREATE DATABASE demodb;
CREATE DATABASE
postgres=# \l
      List of databases
  Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
 demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
 postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=CTc/postgres +
 template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
 template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=CTc/postgres
(4 rows)

postgres=#
```

- 3- Connect to the new database using command “\c demodb”

```
SQL Shell (psql)
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
psql (17.4)
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=# \l

      List of databases
  Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
 postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres
 template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=CTc/postgres
 template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres
          +
          postgres=CTc/postgres
(3 rows)

postgres=# CREATE DATABASE demodb;
CREATE DATABASE
postgres=# \l

      List of databases
  Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
 demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres
 postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=CTc/postgres
 template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres
          +
          postgres=CTc/postgres
 template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres
          +
          postgres=CTc/postgres
(4 rows)

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

4- Drop database using command “DROP DATABASE test”

```

SQL Shell (psql)
page "Notes for Windows users" for details.
Type "help" for help.

postgres=# \l
                                List of databases
   Name   | Owner   | Encoding | Locale Provider | Collate      | Ctype        | Locale | ICU Rules | Access privileges
-----
 postgres | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 postgres | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
 template0 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 template1 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
(3 rows)

postgres=# CREATE DATABASE demodb;
CREATE DATABASE
postgres=# \l
                                List of databases
   Name   | Owner   | Encoding | Locale Provider | Collate      | Ctype        | Locale | ICU Rules | Access privileges
-----
 demodb    | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           |
 postgres  | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           |
 postgres  | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 template0 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
 template1 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 template2 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
(4 rows)

postgres=# \c demodb
You are now connected to database "demodb" as user "postgres".
demodb=# CREATE DATABASE test;
CREATE DATABASE
demodb=# \l
                                List of databases
   Name   | Owner   | Encoding | Locale Provider | Collate      | Ctype        | Locale | ICU Rules | Access privileges
-----
 demodb    | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           |
 postgres  | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           |
 postgres  | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 template0 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
 template1 | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | =c/postgres
 test      | postgres | WIN1252  | libc            | English_United States.1252 | English_United States.1252 |         |           | postgres=CTc/postgres
(5 rows)

demodb=# DROP DATABASE test;
DROP DATABASE
demodb=#

```

5- Creating table and adding data to it.

Command "CREATE TABLE students(name, number, age);

Command "INSERT INTO students(name. number, age) VALUES('Sam',1,20);

```
SQL Shell (psql)
demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
(4 rows)

postgres=# \c demodb
You are now connected to database "demodb" as user "postgres".
demodb=# CREATE DATABASE test;
CREATE DATABASE
demodb=# \l
          List of databases
  Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
test | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 | | | |
(5 rows)

demodb=# DROP DATABASE test;
DROP DATABASE
demodb=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# create database student;
CREATE DATABASE
postgres=# \c student
You are now connected to database "student" as user "postgres".
student=# create table students(name text,number int,age int);
CREATE TABLE
student=# \d
          List of relations
 Schema | Name | Type | Owner
-----+-----+-----+-----
 public | students | table | postgres
(1 row)

student=# insert into students(name, number, age) values('Sam',1,20);
INSERT 0 1
student=# insert into students(name, number, age) values('Geetha',2,22);
INSERT 0 1
student=#
```

6- Select the data from table using command “SELECT * FROM students;”

```
SQL Shell (psql) x + v

postgres=# \c demodb
You are now connected to database "demodb" as user "postgres".
demodb=# CREATE DATABASE test;
CREATE DATABASE
demodb=# \l

      List of databases
Name | Owner | Encoding | Locale Provider | Collate | Ctype | Locale | ICU Rules | Access privileges
-----+-----+-----+-----+-----+-----+-----+-----+-----
demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | 
postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | 
template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | postgres=Ctc/postgres +
test | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |  |  | =c/postgres +
      |  |  |  |  |  |  |  |  | postgres=Ctc/postgres
(5 rows)

demodb=# DROP DATABASE test;
DROP DATABASE
demodb=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# create database student;
CREATE DATABASE
postgres=# \c student
You are now connected to database "student" as user "postgres".
student=# create table students(name text,number int,age int);
CREATE TABLE
student=# \d
      List of relations
Schema | Name | Type | Owner
-----+-----+-----+-----
public | students | table | postgres
(1 row)

student=# insert into students(name, number, age) values('Sam',1,20);
INSERT 0 1
student=# insert into students(name, number, age) values('Geetha',2,22);
INSERT 0 1
student=# select * from students;
 name | number | age
-----+-----+-----
 Sam  |      1 |  20
Geetha |      2 |  22
(2 rows)

student=#
```

7- Select data based on column value using command “SELECT * FROM students WHERE AGE = 20;”

```
SQL Shell (psql)
+ -

List of databases

```

Name	Owner	Encoding	Locale Provider	Collate	Ctype	Locale	ICU Rules	Access privileges
demodb	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			
postgres	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			
template0	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			=c/postgres +
template1	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			postgres=CTc/postgres +
test	postgres	WIN1252	libc	English_United States.1252	English_United States.1252			=c/postgres +
								postgres=CTc/postgres

```
(5 rows)

demodb=# DROP DATABASE test;
DROP DATABASE
demodb=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# create database student;
CREATE DATABASE
postgres=# \c student
You are now connected to database "student" as user "postgres".
student=# create table students(name text,number int,age int);
CREATE TABLE
student=# \d
List of relations

```

Schema	Name	Type	Owner
public	students	table	postgres

```
(1 row)

student=# insert into students(name, number, age) values('Sam',1,20);
INSERT 0 1
student=# insert into students(name, number, age) values('Geetha',2,22);
INSERT 0 1
student=# select * from students;

```

name	number	age
Sam	1	20
Geetha	2	22

```
(2 rows)

student=# SELECT * FROM students WHERE AGE = 20;

```

name	number	age
Sam	1	20

```
(1 row)

student=#
```

8- Delete the data inside the table using TRUNCATE TABLE command

```
SQL Shell (psql)
demodb | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |
postgres | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |
template0 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |
template1 | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |
test | postgres | WIN1252 | libc | English_United States.1252 | English_United States.1252 |
(5 rows)

demodb=# DROP DATABASE test;
DROP DATABASE
demodb=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# create database student;
CREATE DATABASE
postgres=# \c student
You are now connected to database "student" as user "postgres".
student=# create table students(name text,number int,age int);
CREATE TABLE
student=# \d
      List of relations
Schema | Name | Type | Owner
-----+-----+-----+-----
public | students | table | postgres
(1 row)

student=# insert into students(name, number, age) values('Sam',1,20);
INSERT 0 1
student=# insert into students(name, number, age) values('Geetha',2,22);
INSERT 0 1
student=# select * from students;
 name | number | age
-----+-----+-----
 Sam  |      1 |   20
Geetha |      2 |   22
(2 rows)

student=# SELECT * FROM students WHERE AGE = 20;
 name | number | age
-----+-----+-----
 Sam  |      1 |   20
(1 row)

student=# TRUNCATE TABLE students;
TRUNCATE TABLE
student=#
```

- 9- Create project folder and create a virtual environment using “python -m venv name”
And activate the virtual environment using ‘name\Scripts\activate.bat’


```
Command Prompt
Downloading platformdirs-4.3.7-py3-none-any.whl.metadata (11 kB)
Downloading virtualenv-20.29.3-py3-none-any.whl (4.3 MB)
4.3/4.3 MB 3.2 MB/s eta 0:00:00
Downloading distlib-0.3.9-py2.py3-none-any.whl (468 kB)
Downloading filelock-3.18.0-py3-none-any.whl (16 kB)
Downloading platformdirs-4.3.7-py3-none-any.whl (18 kB)
WARNING: Ignoring invalid distribution ~ip (C:\Python312\Lib\site-packages)
Installing collected packages: distlib, platformdirs, filelock, virtualenv
WARNING: Failed to write executable - trying to use .delete logic
ERROR: Could not install packages due to an OSError: [WinError 2] The system cannot find the file specified: 'C:\\Python312\\Scripts\\virtualenv.exe' -> 'C:\\Python312\\Scripts\\virtualenv.exe.delete'

[notice] A new release of pip is available: 24.2 -> 25.0.1
[notice] To update, run: python.exe -m pip install --upgrade pip

C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>python -version
Unknown option: -e
usage: python [option] ... [-c cmd | -m mod | file | -] [arg] ...
Try 'python -h' for more information.

C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>python --version
Python 3.12.2

C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>where python
C:\Python312\python.exe
C:\Users\vreddipalli\AppData\Local\Microsoft\WindowsApps\python.exe

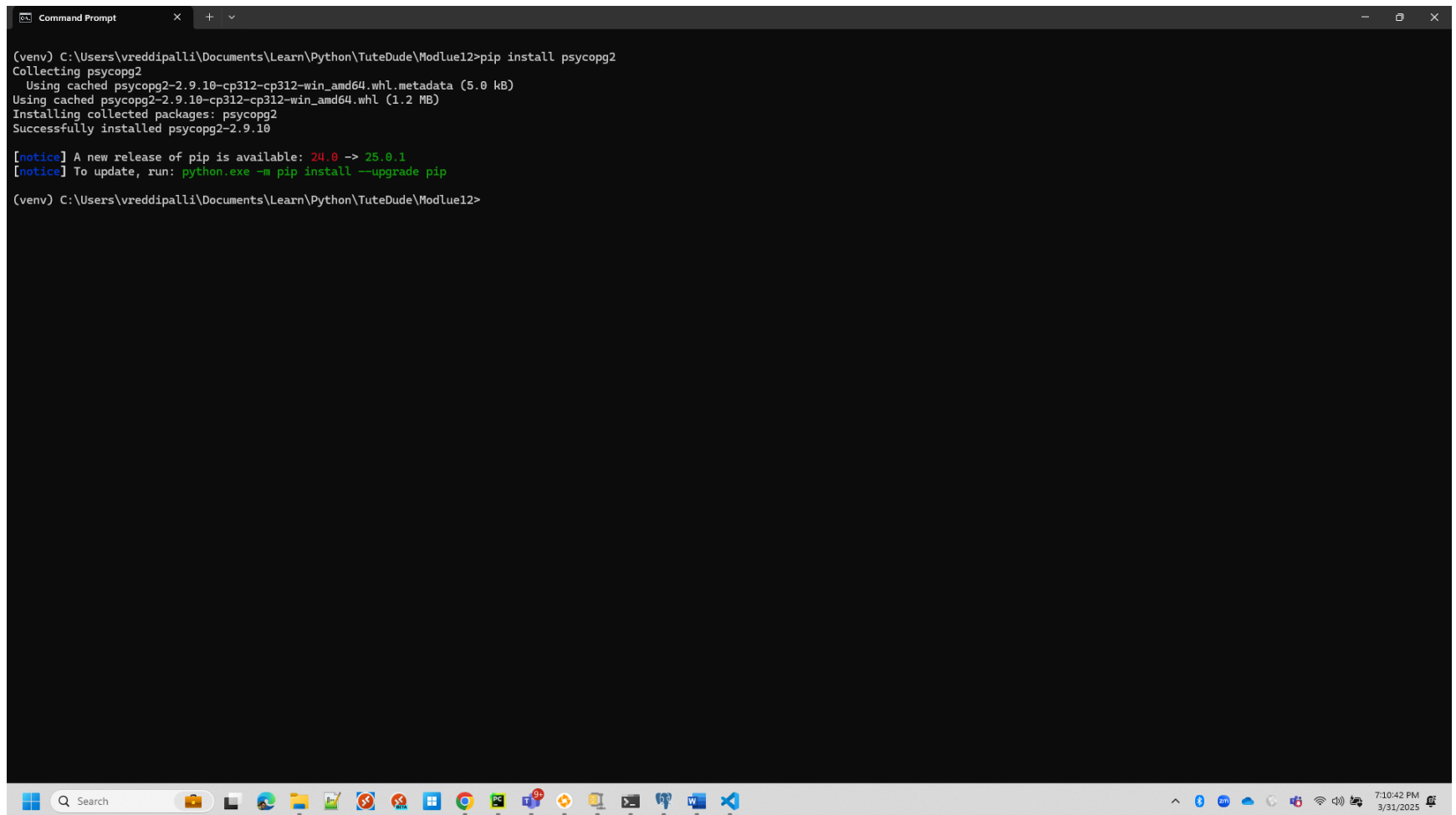
C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>python -m venv venv

C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>venv\Scripts\activate.bat

(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>python test.py
Python

(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>deactivate
C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\ModLue12>
```

10- Install psycopg2 in the virtual environment using command “pip install psycopg2”



```
(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\Modlue12>pip install psycopg2
Collecting psycopg2
  Using cached psycopg2-2.9.10-cp312-cp312-win_amd64.whl.metadata (5.0 kB)
Using cached psycopg2-2.9.10-cp312-cp312-win_amd64.whl (1.2 MB)
Installing collected packages: psycopg2
Successfully installed psycopg2-2.9.10

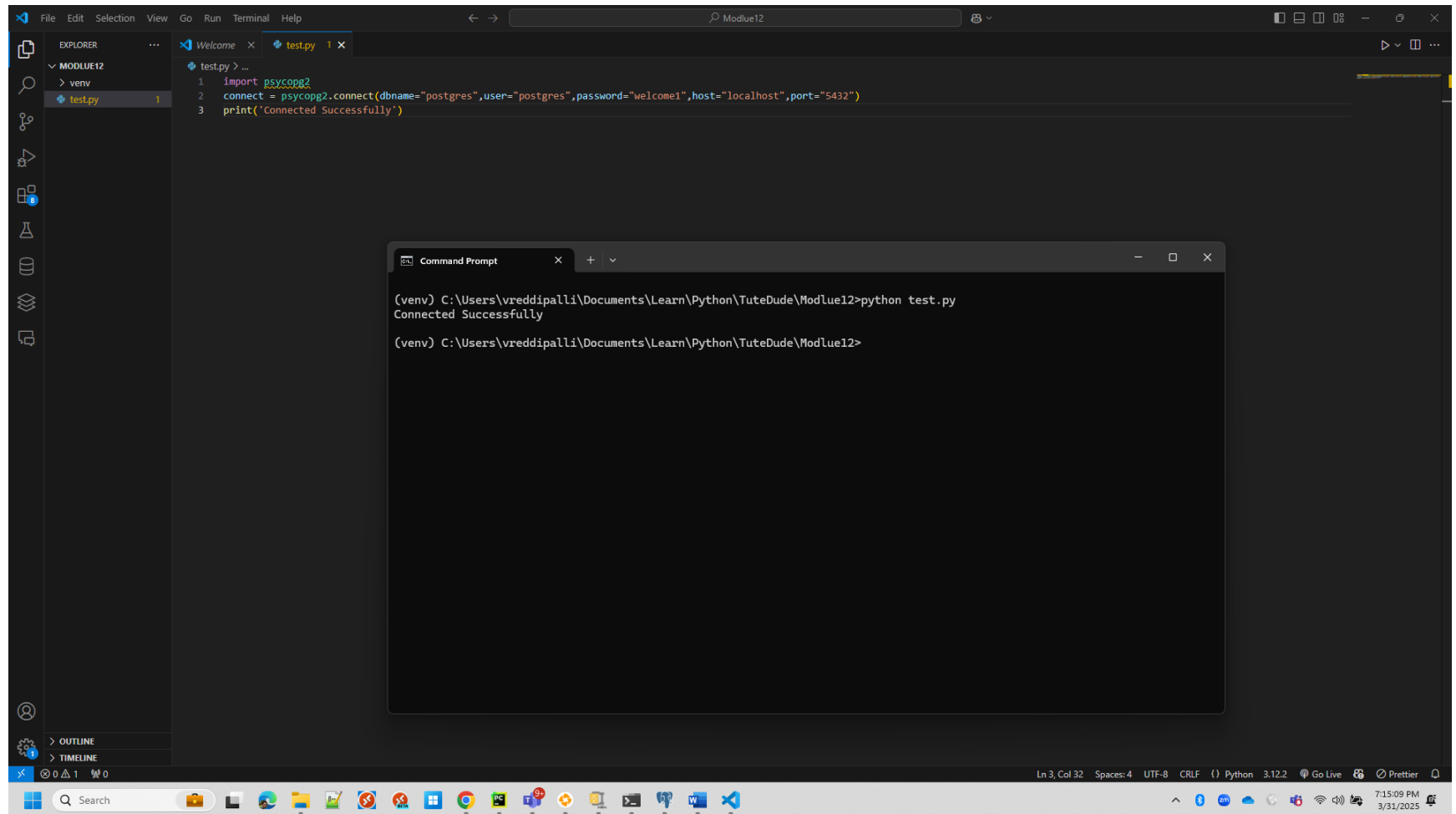
[notice] A new release of pip is available: 24.0 -> 25.0.1
[notice] To update, run: python.exe -m pip install --upgrade pip

(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\Modlue12>
```

11- Connect to the database using psycopg2 in python.

```
import psycopg2
connect =
psycopg2.connect(dbname="postgres",user="postgres",password="welcome1",host="localhost",port="5432")
```

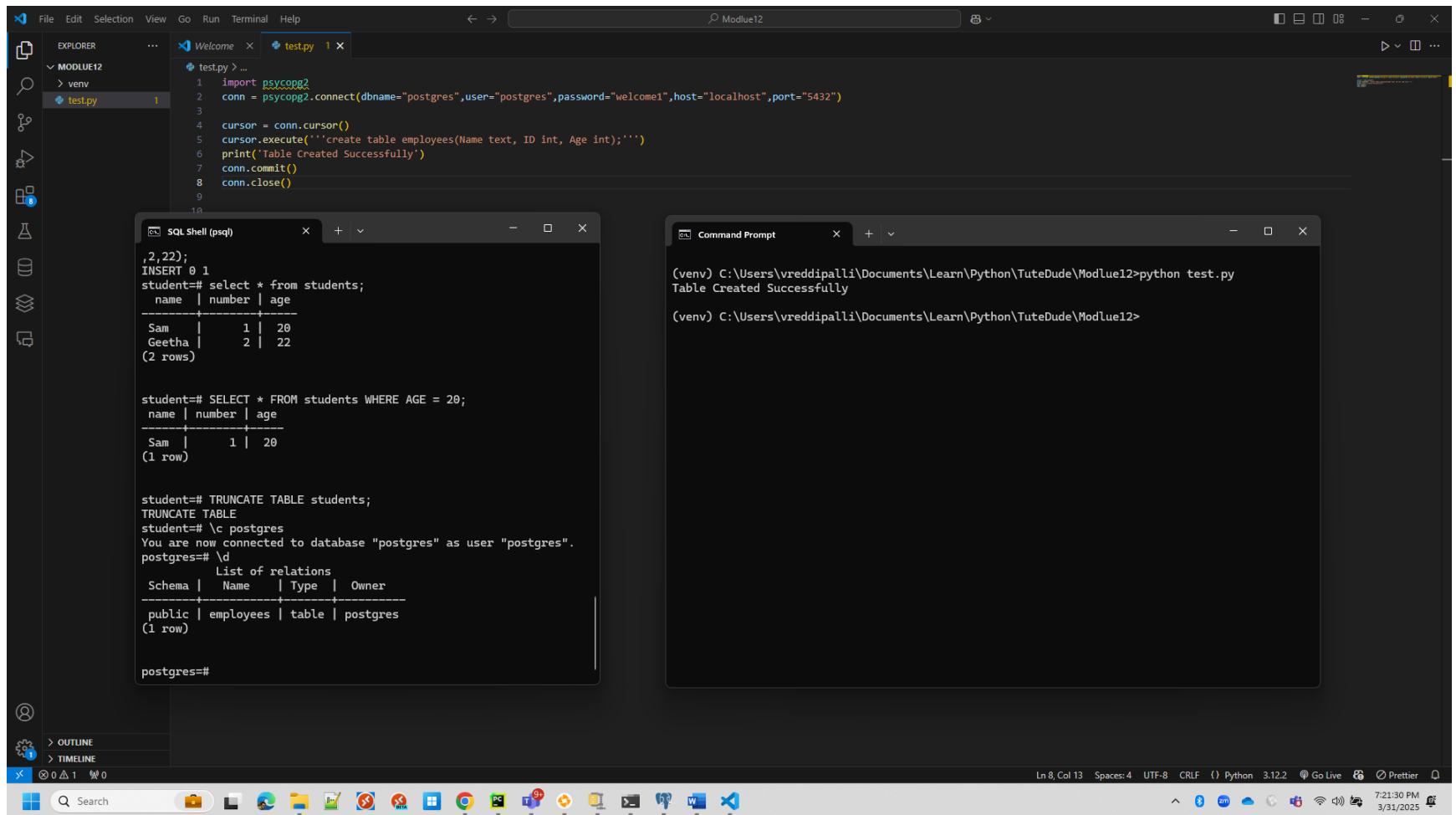
```
print('Connected Successfully')
```



12- Create table in python

```
import psycopg2
```

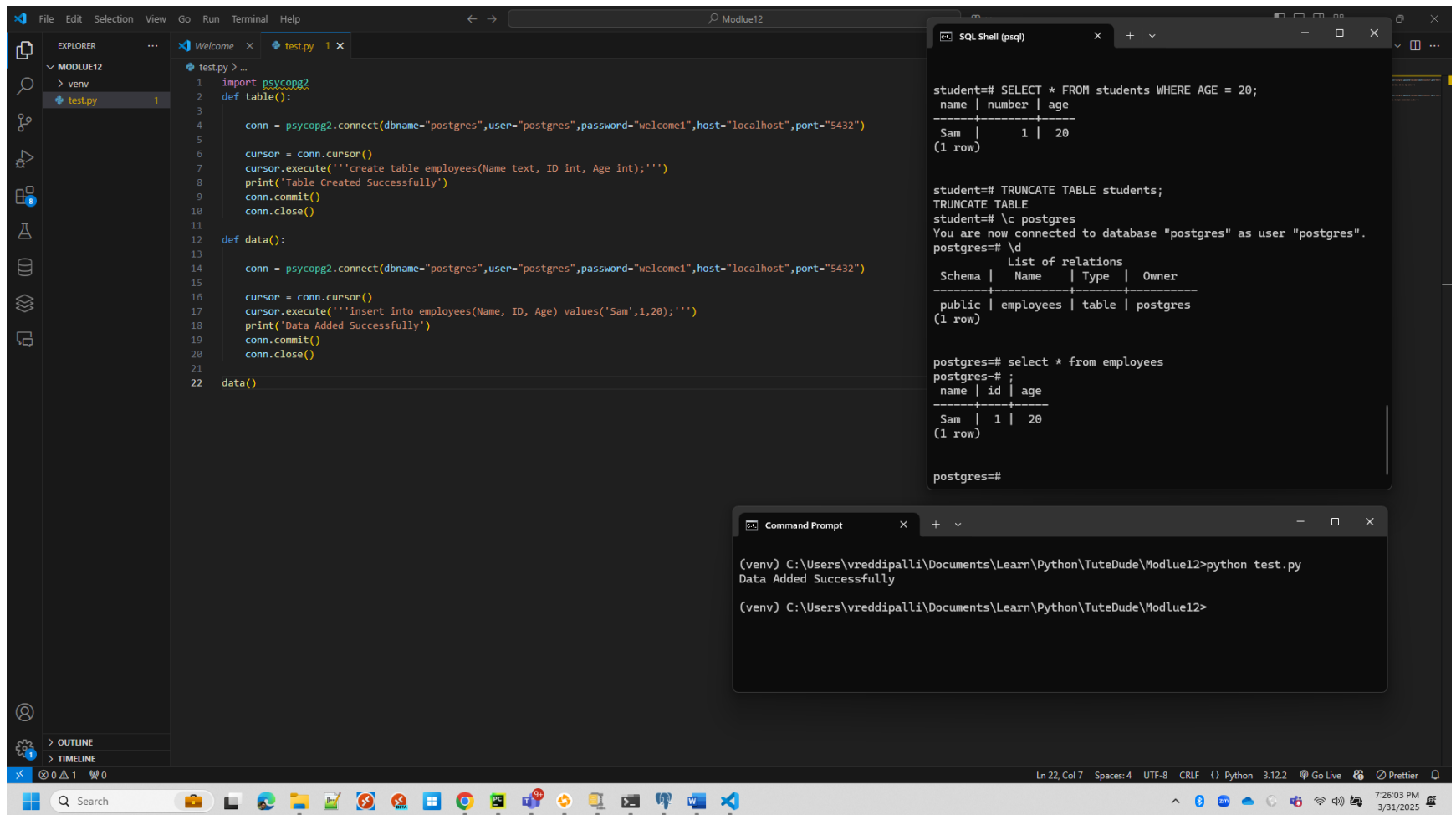
```
conn =  
psycopg2.connect(dbname="postgres",user="postgres",password="welcome1",host="localhost",port="5432")  
  
cursor = conn.cursor()  
cursor.execute('''create table employees(Name text, ID int, Age int);''')  
print('Table Created Successfully')  
conn.commit()  
conn.close()
```



13- Insert data into a table using python

```
import psycopg2
def data():
```

```
conn =  
psycopg2.connect(dbname="postgres",user="postgres",password="welcome1",host="localhost",port="5432")  
  
cursor = conn.cursor()  
cursor.execute('''insert into employees(Name, ID, Age) values('Sam',1,20);''')  
print('Data Added Successfully')  
conn.commit()  
conn.close()  
  
data()
```



14- Extract the data from the table using python.

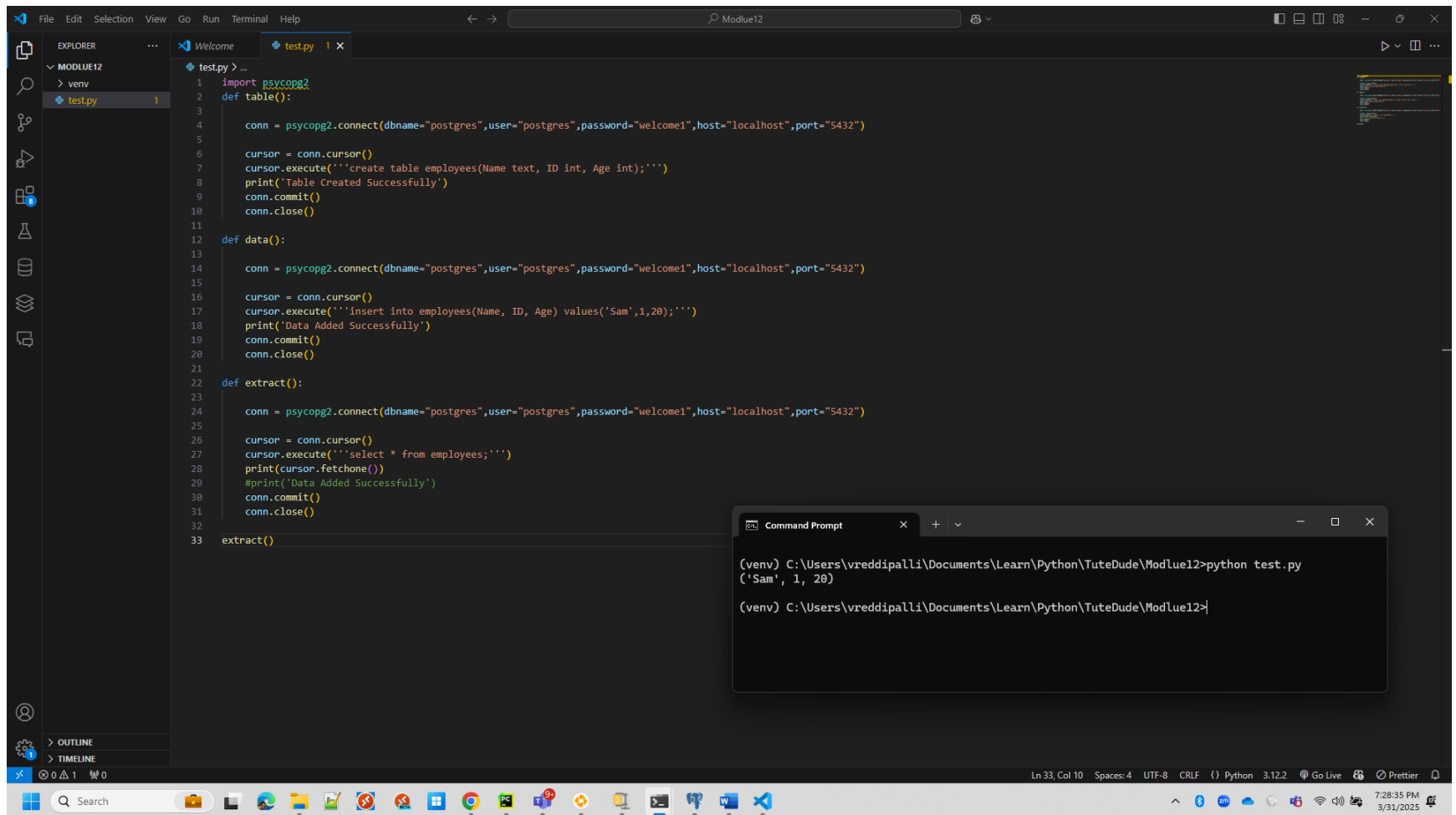
```

import psycopg2

def extract():

```

```
conn =  
psycopg2.connect(dbname="postgres",user="postgres",password="welcome1",host="localhost",port="5432")  
  
cursor = conn.cursor()  
cursor.execute('''select * from employees;''')  
print(cursor.fetchone())  
#print('Data Added Successfully')  
conn.commit()  
conn.close()  
  
extract()
```

15- Insert into table using user input.

```
import psycopg2
def data():
```

```
conn =  
psycopg2.connect(dbname="postgres",user="postgres",password="welcome1",host="localhost",port="5432")  
  
cursor = conn.cursor()  
name = input('Enter name:')  
id = input('Enter ID: ')  
age = input('Enter Age: ')  
query = '''insert into employees(Name, ID, Age) values(%s, %s, %s);'''  
cursor.execute(query, (name, id, age))  
print('Data Added Successfully')  
conn.commit()  
conn.close()  
  
data()
```

The image shows a VS Code editor with a Python script named `test.py` that interacts with a PostgreSQL database using `psycopg2`. The script includes functions for creating a table, adding data, and extracting data. To the right, a `SQL Shell (psql)` window shows the execution of SQL commands, including truncating the `students` table, connecting to the `postgres` database, and querying the `employees` table. Below the SQL Shell, a `Command Prompt` window shows the execution of the `test.py` script, which prompts for user input and displays the results of the database operations.

```
test.py > ...
1 import psycopg2
2 def table():
3
4     conn = psycopg2.connect(dbname="postgres", user="postgres", password="welcome1", host="localhost", port="5432")
5
6     cursor = conn.cursor()
7     cursor.execute('create table employees(Name text, ID int, Age int);')
8     print('Table Created Successfully')
9     conn.commit()
10    conn.close()
11
12 def data():
13
14     conn = psycopg2.connect(dbname="postgres", user="postgres", password="welcome1", host="localhost", port="5432")
15
16     cursor = conn.cursor()
17     name = input('Enter name:')
18     id = input('Enter ID: ')
19     age = input('Enter Age: ')
20     query = 'insert into employees(Name, ID, Age) values(%s, %s, %s);'
21     cursor.execute(query, (name, id, age))
22     print('Data Added Successfully')
23     conn.commit()
24     conn.close()
25
26 def extract():
27
28     conn = psycopg2.connect(dbname="postgres", user="postgres", password="welcome1", host="localhost", port="5432")
29
30     cursor = conn.cursor()
31     cursor.execute('select * from employees;')
32     print(cursor.fetchone())
33     #print('Data Added Successfully')
34     conn.commit()
35     conn.close()
36
37 data()
```

SQL Shell (psql)

```
student=# TRUNCATE TABLE students;
TRUNCATE TABLE
student=# \c postgres
You are now connected to database "postgres" as user "postgres".
postgres=# \d
               List of relations
Schema | Name      | Type  | Owner
-----+-----+-----+-----
public | employees | table | postgres
(1 row)

postgres=# select * from employees
postgres=# ;
 name | id | age
-----+---+----
 Sam  |  1 |  20
(1 row)

postgres=# select * from employees;
 name | id | age
-----+---+----
 Sam  |  1 |  20
 John |  2 |  32
(2 rows)

postgres=#
```

Command Prompt

```
(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\Modlue12>python test.py
Enter name:John
Enter ID: 2
Enter Age: 32
Data Added Successfully

(venv) C:\Users\vreddipalli\Documents\Learn\Python\TuteDude\Modlue12>
```