

Instalação do PostgreSQL, Criação de Tabelas, Inserção de Dados, Consultas

Demonstração usando o Software

Exportar BD como SQL

- Servers
 - PostgreSQL 14
 - Databases (2)
 - exemplo
 - Create
 - Delete/Drop
 - Refresh...
 - Restore...
 - Backup...
 - CREATE Script
 - Disconnect from database
 - Generate ERD
 - Maintenance...
 - Grant Wizard...
 - Search Objects...
 - PSQL Tool
 - Query Tool
 - Properties...
 - Foreign Tables
 - Functions
 - Materialized Views
 - Operators
 - Procedures
 - 1.3 Sequences
 - Tables (1)

exemplo/postgres@PostgreSQL 14

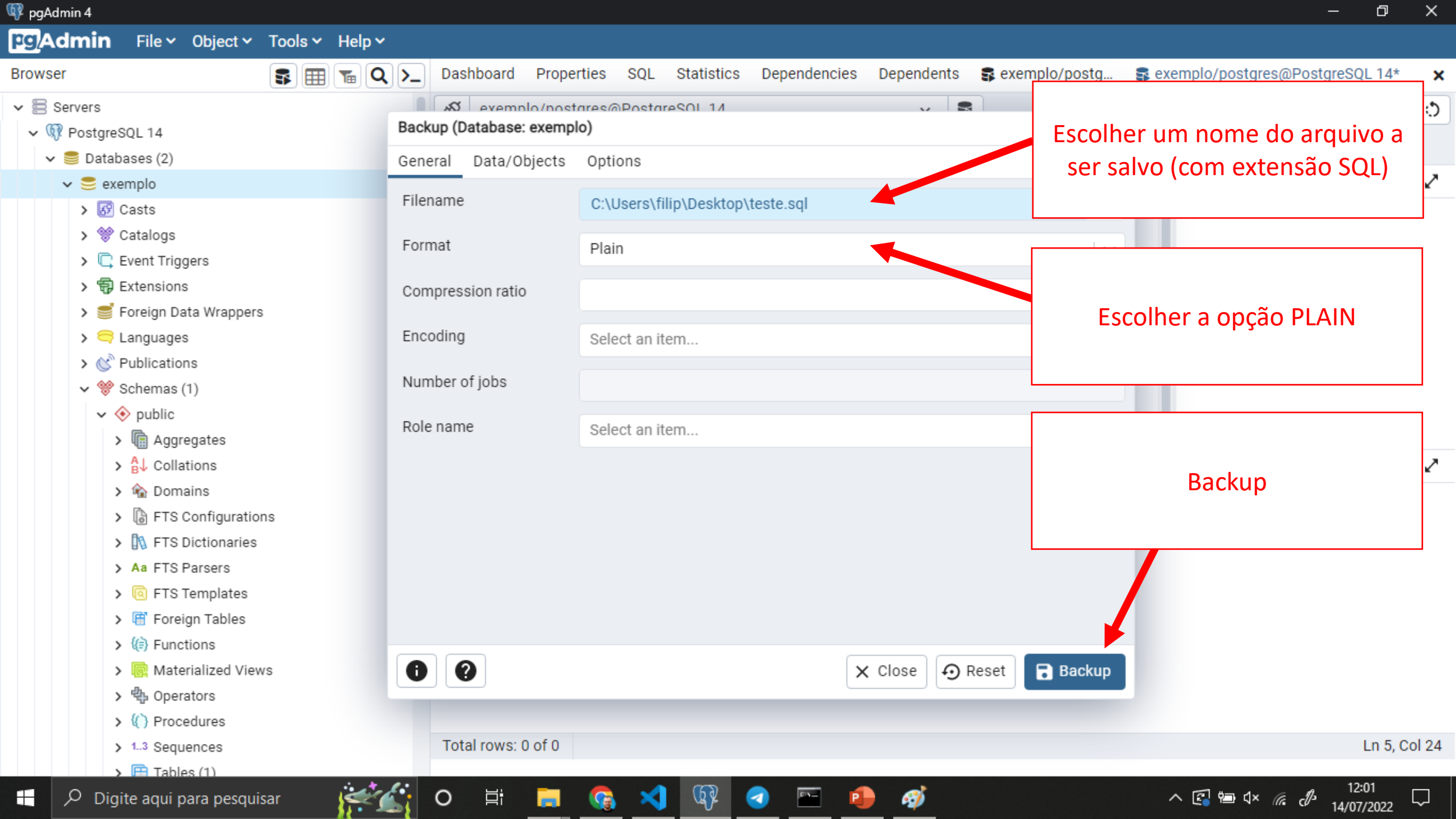
No limit

Query Query History Scratch Pad

```
1 -- Database: exemplo
2
3 -- DROP DATABASE IF EXISTS exemplo;
4
5 CREATE DATABASE exemplo
6     WITH
7     OWNER = postgres
8     ENCODING = 'UTF8'
9     LC_COLLATE = 'Portuguese_Brazil.1252'
10    LC_CTYPE = 'Portuguese_Brazil.1252'
11    TABLESPACE = pg_default
12    CONNECTION LIMIT = -1;
```

Data output Messages Notifications

Total rows: 0 of 0 Ln 7, Col 21



Backup (Database: exemplo)

General Data/Objects Options

Filename C:\Users\filip\Desktop\teste.sql

Format Plain

Compression ratio

Encoding Select an item...

Number of jobs

Role name Select an item...

Escolher um nome do arquivo a ser salvo (com extensão SQL)

Escolher a opção PLAIN

Backup

i ?

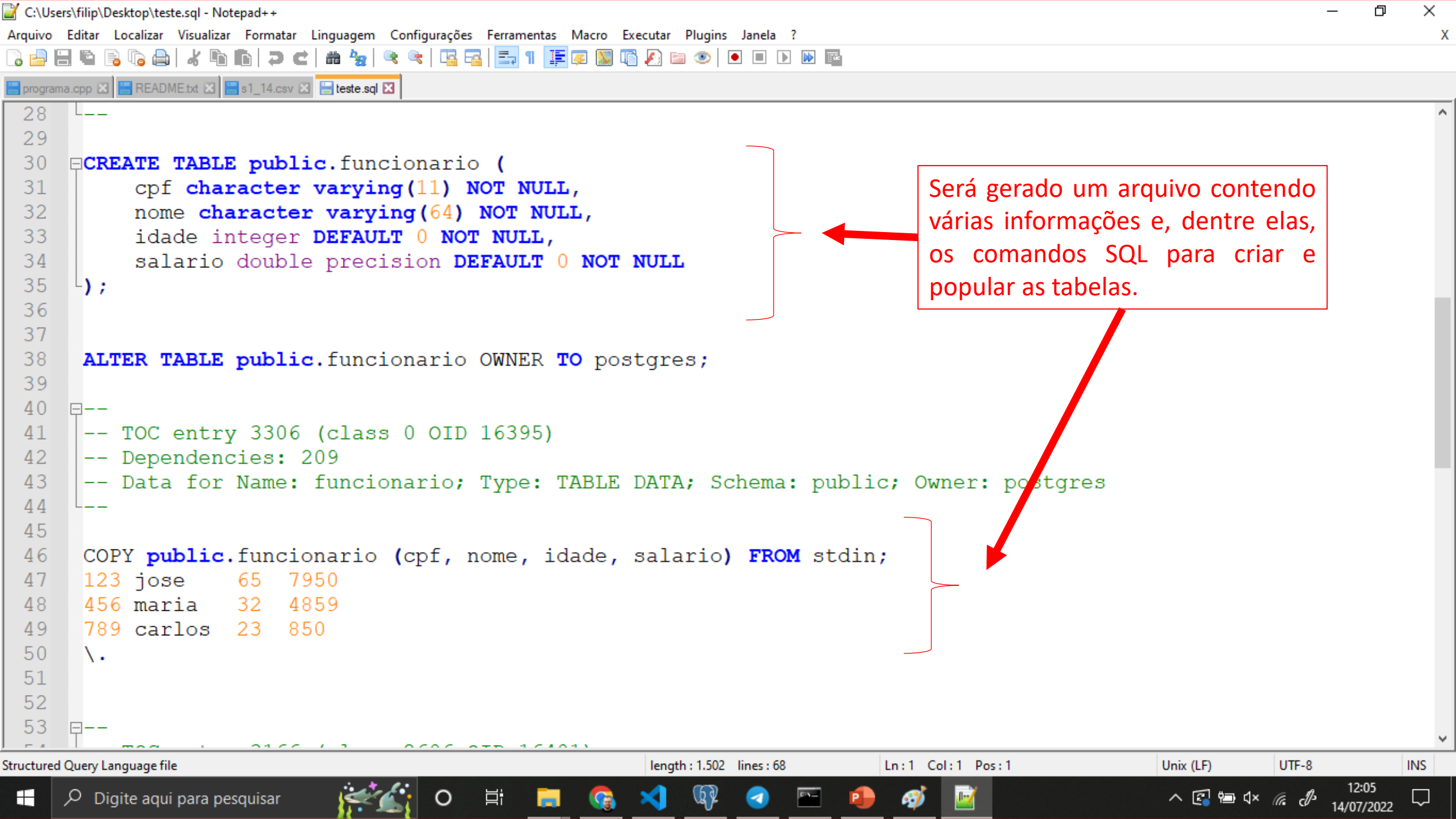
Close

Reset

Backup

Total rows: 0 of 0

Ln 5, Col 24



```
28  --
29
30  CREATE TABLE public.funcionario (
31      cpf character varying(11) NOT NULL,
32      nome character varying(64) NOT NULL,
33      idade integer DEFAULT 0 NOT NULL,
34      salario double precision DEFAULT 0 NOT NULL
35  );
36
37
38  ALTER TABLE public.funcionario OWNER TO postgres;
39
40  --
41  -- TOC entry 3306 (class 0 OID 16395)
42  -- Dependencies: 209
43  -- Data for Name: funcionario; Type: TABLE DATA; Schema: public; Owner: postgres
44  --
45
46  COPY public.funcionario (cpf, nome, idade, salario) FROM stdin;
47  123 jose      65  7950
48  456 maria    32  4859
49  789 carlos   23  850
50  \.
51
52
53  --
```

Será gerado um arquivo contendo várias informações e, dentre elas, os comandos SQL para criar e popular as tabelas.

Utility not found

'C:\Program Files\PostgreSQL\14\pgAdmin 4\bin\pg_dump.exe' file not found. Please correct the Binary Path in the Preferences dialog

OK

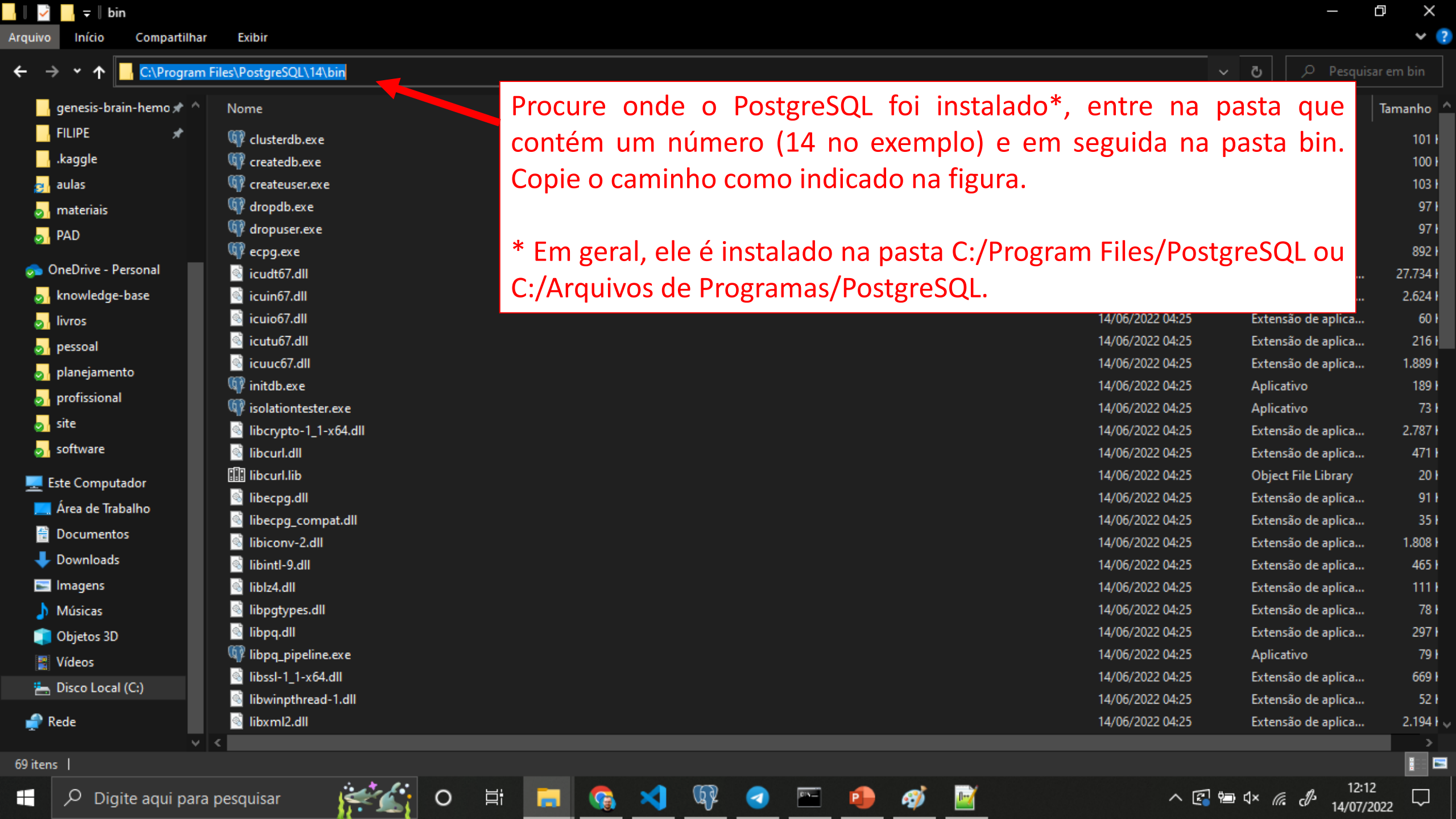
```
5 CREATE DATABASE exemplo
6 WITH
7 OWNER = postgres
8 ENCODING = 'UTF8'
9 LC_COLLATE = 'Portuguese_Brazil.1252'
10 LC_CTYPE = 'Portuguese_Brazil.1252'
11 TABLESPACE = pg_default
12 CONNECTION LIMIT = -1;
```

Data output Messages Notifications

Ao clicar no comando de Backup, pode acontecer o erro utility não encontrada como acima. Nesse caso, é necessário atualizar a configuração que diz onde estão os programas do postgresql.

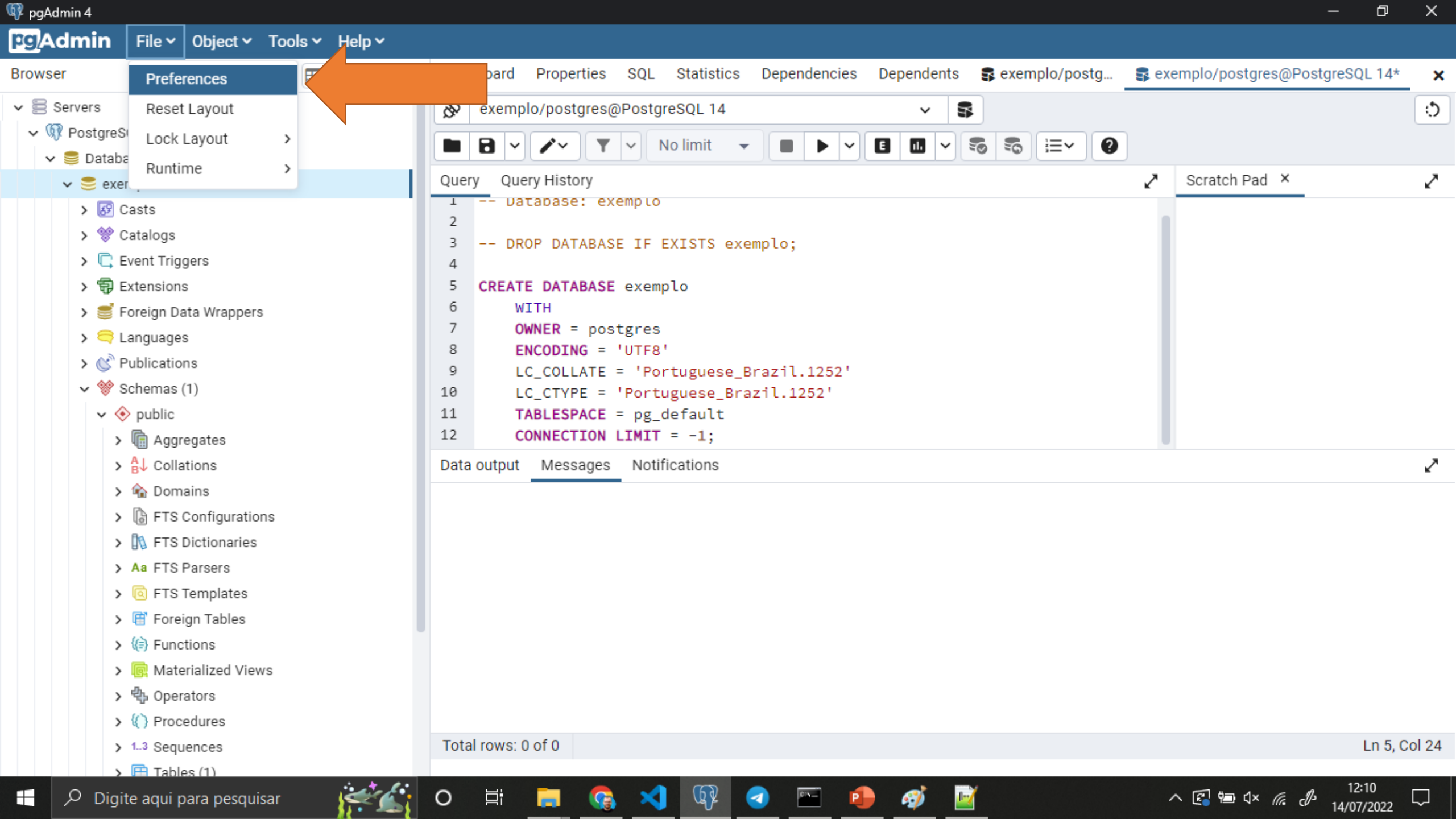
Total rows: 0 of 0

Ln 5, Col 24



Procure onde o PostgreSQL foi instalado*, entre na pasta que contém um número (14 no exemplo) e em seguida na pasta bin. Copie o caminho como indicado na figura.

* Em geral, ele é instalado na pasta C:/Program Files/PostgreSQL ou C:/Arquivos de Programas/PostgreSQL.



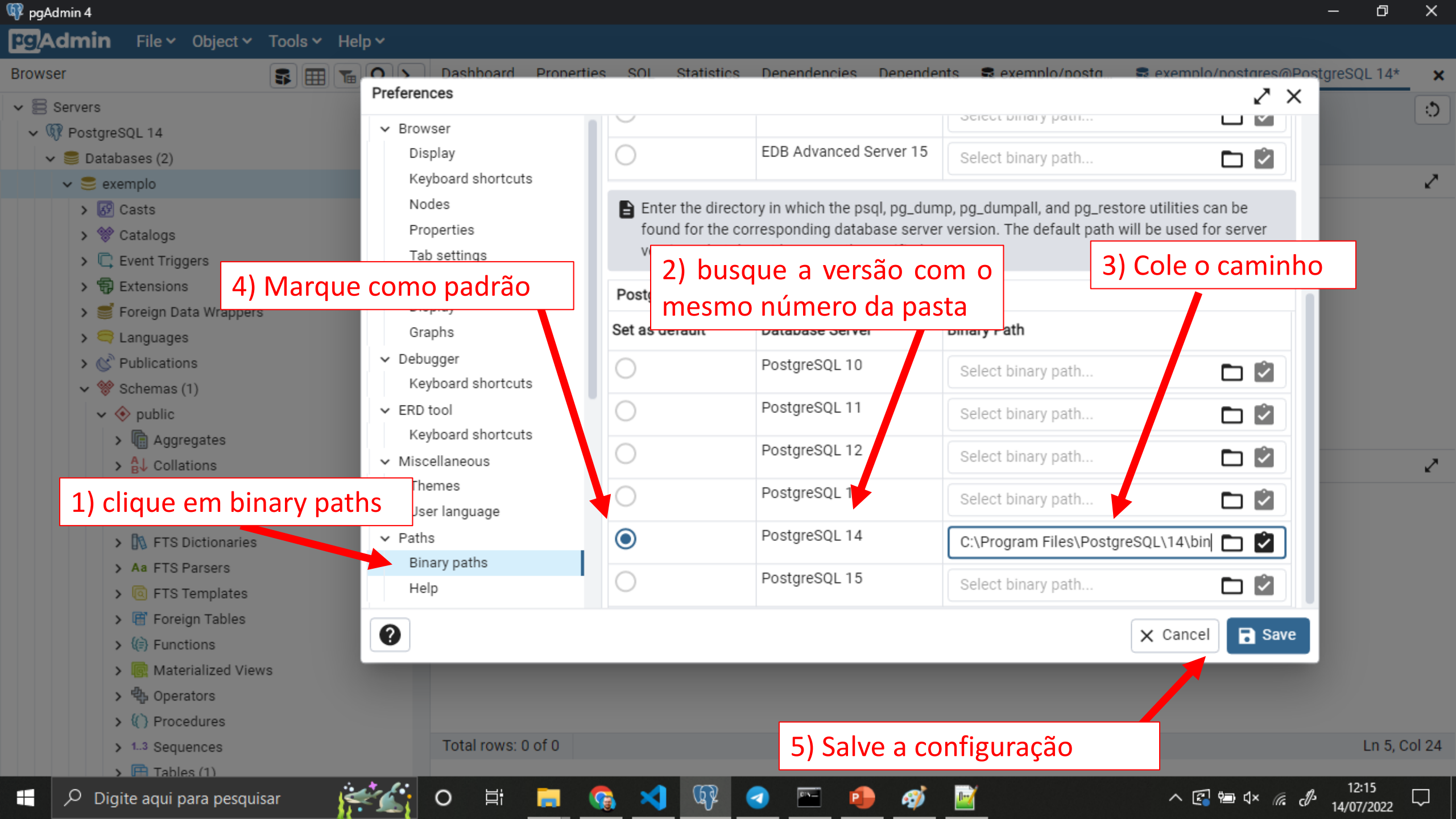
Browser Servers PostgreSQL Database exemplo Casts Catalogs Event Triggers Extensions Foreign Data Wrappers Languages Publications Schemas (1) public Aggregates Collations Domains FTS Configurations FTS Dictionaries FTS Parsers FTS Templates Foreign Tables Functions Materialized Views Operators Procedures Sequences Tables (1)

Preferences Reset Layout Lock Layout Runtime



exemplo/postgres@PostgreSQL 14 Query Query History Scratch Pad

Data output Messages Notifications Total rows: 0 of 0 Ln 5, Col 24



4) Marque como padrão

2) busque a versão com o mesmo número da pasta

3) Cole o caminho

1) clique em binary paths

5) Salve a configuração

Preferences

Browser

- Display
- Keyboard shortcuts
- Nodes
- Properties
- Tab settings

Enter the directory in which the psql, pg_dump, pg_dumpall, and pg_restore utilities can be found for the corresponding database server version. The default path will be used for server

Set as default	Database Server	Binary Path
<input type="radio"/>	EDB Advanced Server 15	Select binary path...
<input type="radio"/>	PostgreSQL 10	Select binary path...
<input type="radio"/>	PostgreSQL 11	Select binary path...
<input type="radio"/>	PostgreSQL 12	Select binary path...
<input type="radio"/>	PostgreSQL 13	Select binary path...
<input checked="" type="radio"/>	PostgreSQL 14	C:\Program Files\PostgreSQL\14\bin
<input type="radio"/>	PostgreSQL 15	Select binary path...

Cancel Save

O processo de importação é bem parecido com a exportação

The image shows the pgAdmin interface with a context menu open over the 'exemplo' database. A blue arrow points to the 'Restore...' option in the menu. The 'Restore (Database: exemplo)' dialog box is open, showing the 'General' tab. The 'Format' is set to 'Custom or tar', the 'Filename' is 'C:\Users\filip\Desktop\teste.sql', and the 'Role name' is 'Select an item...'. The dialog has 'Close', 'Reset', and 'Restore' buttons at the bottom.

pgAdmin File Object Tools Help

Browser

Servers

PostgreSQL 14

Databases (2)

exemplo

- Create
- Delete/Drop
- Refresh...
- Restore...**
- Backup...
- CREATE Script
- Disconnect from database
- Generate ERD
- Maintenance...
- Grant Wizard...
- Search Objects...
- PSQL Tool
- Query Tool
- Properties...

Restore (Database: exemplo)

General Data/Objects Options

Format Custom or tar

Filename C:\Users\filip\Desktop\teste.sql

Number of jobs

Role name Select an item...

Close Reset Restore

Instalação de Pacotes para o Trabalho

```
python -m pip install psycopg2 matplotlib seaborn openpyxl
```

- **psycopg2**: Interação com o banco de dados PostgreSQL via Python.
- **matplotlib**: Gráficos
- **seaborn**: Gráficos e Análise Estatística
- **openpyxl**: Leitura e Escrita de Arquivos do Excel

Interação com o Banco PostgreSQL via Python

```
import psycopg2 as pg
```

```
con = pg.connect(host="localhost",  
                 database="exemplo",  
                 user="postgres",  
                 password="123")
```

} requer usuário e senha

```
cur = con.cursor()
```

```
cur.execute("SELECT * FROM funcionario")  
result = cur.fetchall()
```

```
for row in result:  
    print(row)
```

```
con.close()
```

ATENÇÃO!

Sintaxe diferente
do sqlite3! O
execute não retorna
o resultado. O fetch
é feito com o cursor.

Escrita de Arquivos do Excel

A biblioteca permite realizar várias operações como ajuste de fonte das células, etc., mas vamos nos ater à escrita e leitura de dados

```
import openpyxl

my_wb = openpyxl.Workbook()
my_sheet = my_wb.active # escrevendo na primeira "folha" da planilha

## escrita usando indice de linha e coluna
c1 = my_sheet.cell(row = 1, column = 1)
c1.value = "Nomes"
c2 = my_sheet.cell(row = 2 , column = 1)
c2.value = "Joao"

## escrita usando indicador de celula do excel
c3 = my_sheet['A3']
c3.value = "Maria"
c4 = my_sheet['A4']
c4.value = "Carlos"

# salvar arquivo
my_wb.save("sample_data3.xlsx")
```




AutoSave On



sample_data

File

Home

Insert

Draw

Page L



Undo



Paste

Clipboard



Calibri

B

I

U

B1



f_x

	A	B	C	D
1	Nomes			
2	Joao			
3	Maria			
4	Carlos			
5				
6				
7				

```
import openpyxl

my_wb = openpyxl.Workbook()

# criacao de uma nova "folha"
sheet2 = my_wb.create_sheet("Carros")

sheet2.cell(row = 1, column = 1).value = "Marca"
sheet2.cell(row = 2, column = 1).value = "Fiat"
sheet2.cell(row = 3, column = 1).value = "Chevrolet"
sheet2.cell(row = 4, column = 1).value = "BMW"

sheet2.cell(row = 1, column = 2).value = "Modelo"
sheet2.cell(row = 2, column = 2).value = "Palio Fire"
sheet2.cell(row = 3, column = 2).value = "Onix"
sheet2.cell(row = 4, column = 2).value = "M3"

# salvar arquivo
my_wb.save("sample_data3.xlsx")
```



AutoSave



sample_data3.xlsx • Saved

File

Home

Insert

Draw

Page Layout

Formulas



Undo



Paste

Clipboard



Calibri

11



B

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U



Font

E1



fx

	A	B	C	D	E	F
1	Marca	Modelo				
2	Fiat	Palio Fire				
3	Chevrolet	Onix				
4	BMW	M3				
5						
6						
7						
8						

Como Salvar Resultados de Consultas em Arquivos do Excel

```
import psycopg2 as pg
import openpyxl

con = pg.connect(host="localhost", database="exemplo",
                 user="postgres", password="123")

cur = con.cursor()

cur.execute("SELECT * FROM funcionario")
funcionarios = cur.fetchall()

my_wb = openpyxl.Workbook()
my_sheet = my_wb.active

(...)
```

(...)

```
# cabeçalho
```

```
my_sheet.cell(row=1, column=1).value = "ID"
```

```
my_sheet.cell(row=1, column=2).value = "Nome"
```

```
my_sheet.cell(row=1, column=3).value = "Idade"
```

```
my_sheet.cell(row=1, column=4).value = "CPF"
```

```
for row_id in range(len(funcionarios)):
```

```
    for col_id in range(4): # 4 colunas na tabela
```

```
        my_sheet.cell(row=row_id+2, column=col_id+1).value = \
            funcionarios[row_id][col_id]
```

```
my_wb.save("query_funcionarios.xlsx")
```

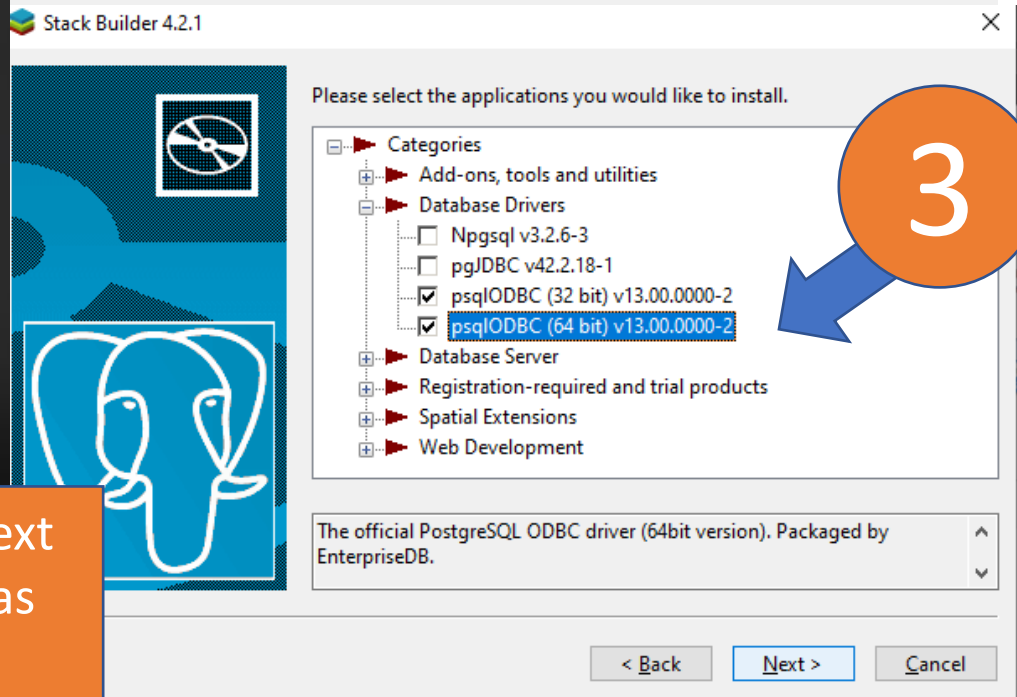
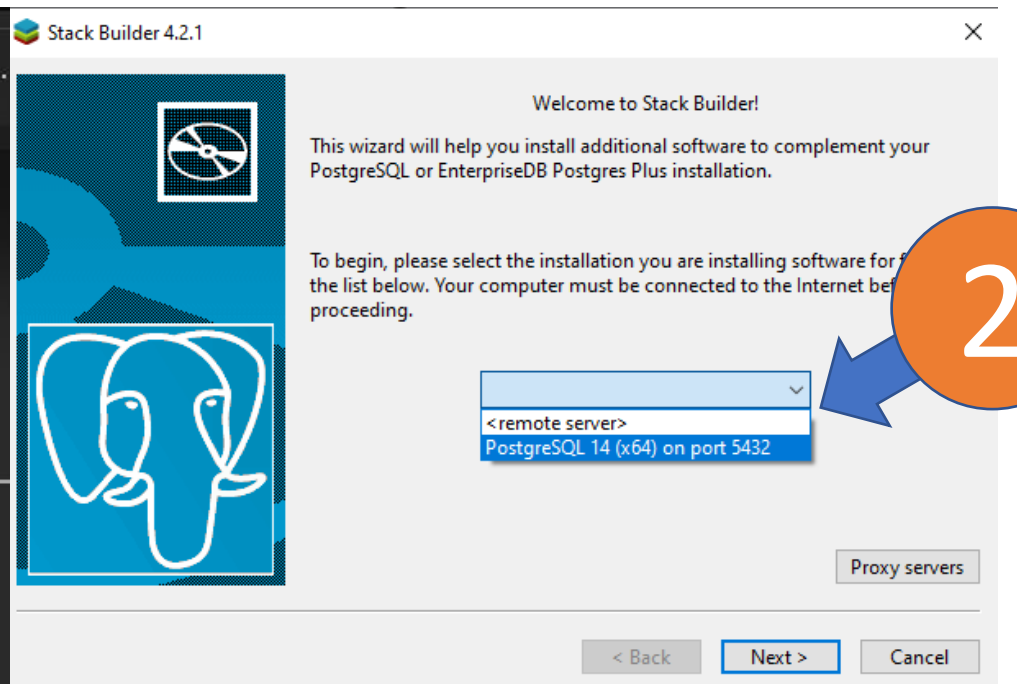
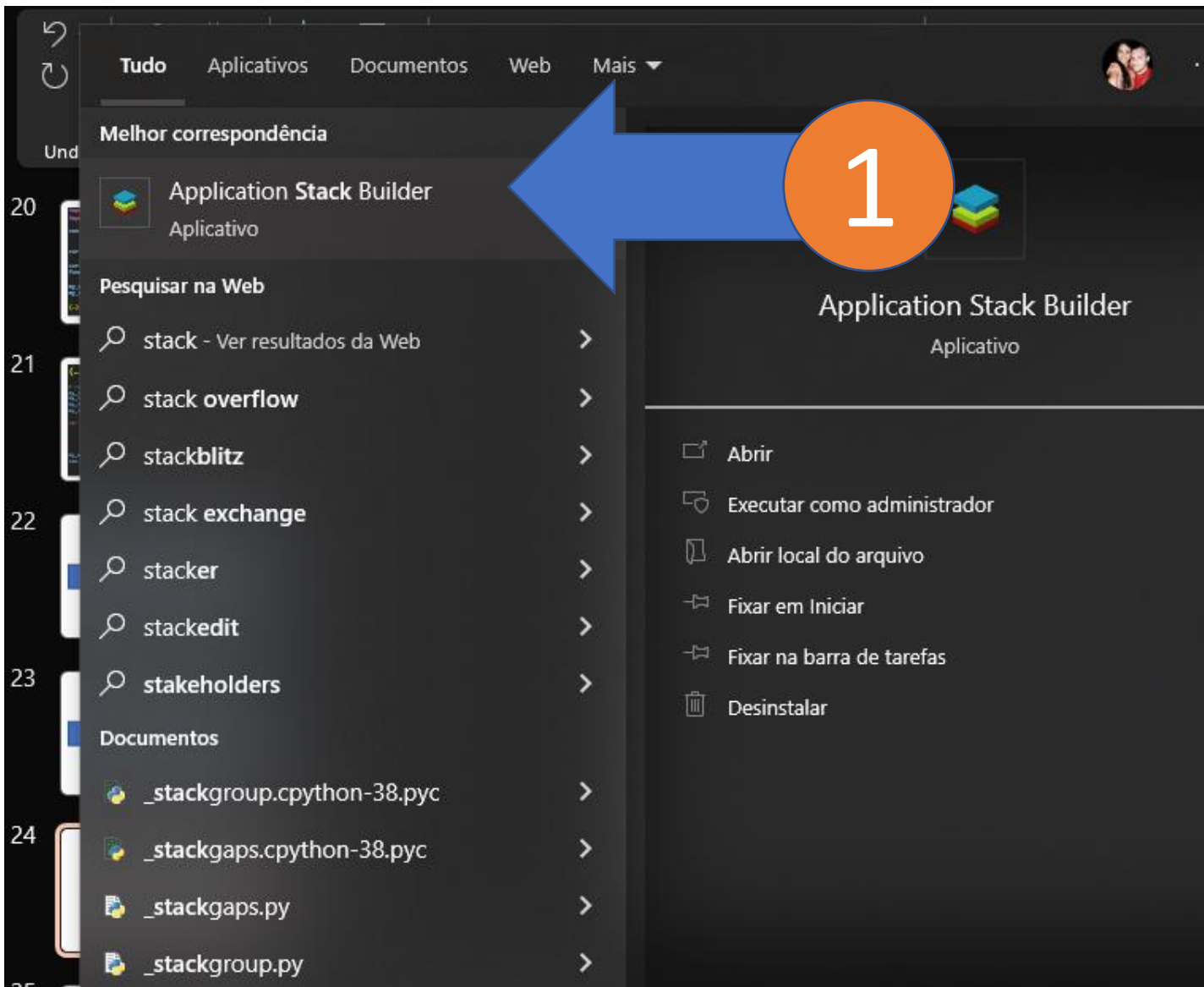
```
con.close()
```

Gráficos com matplotlib e seaborn

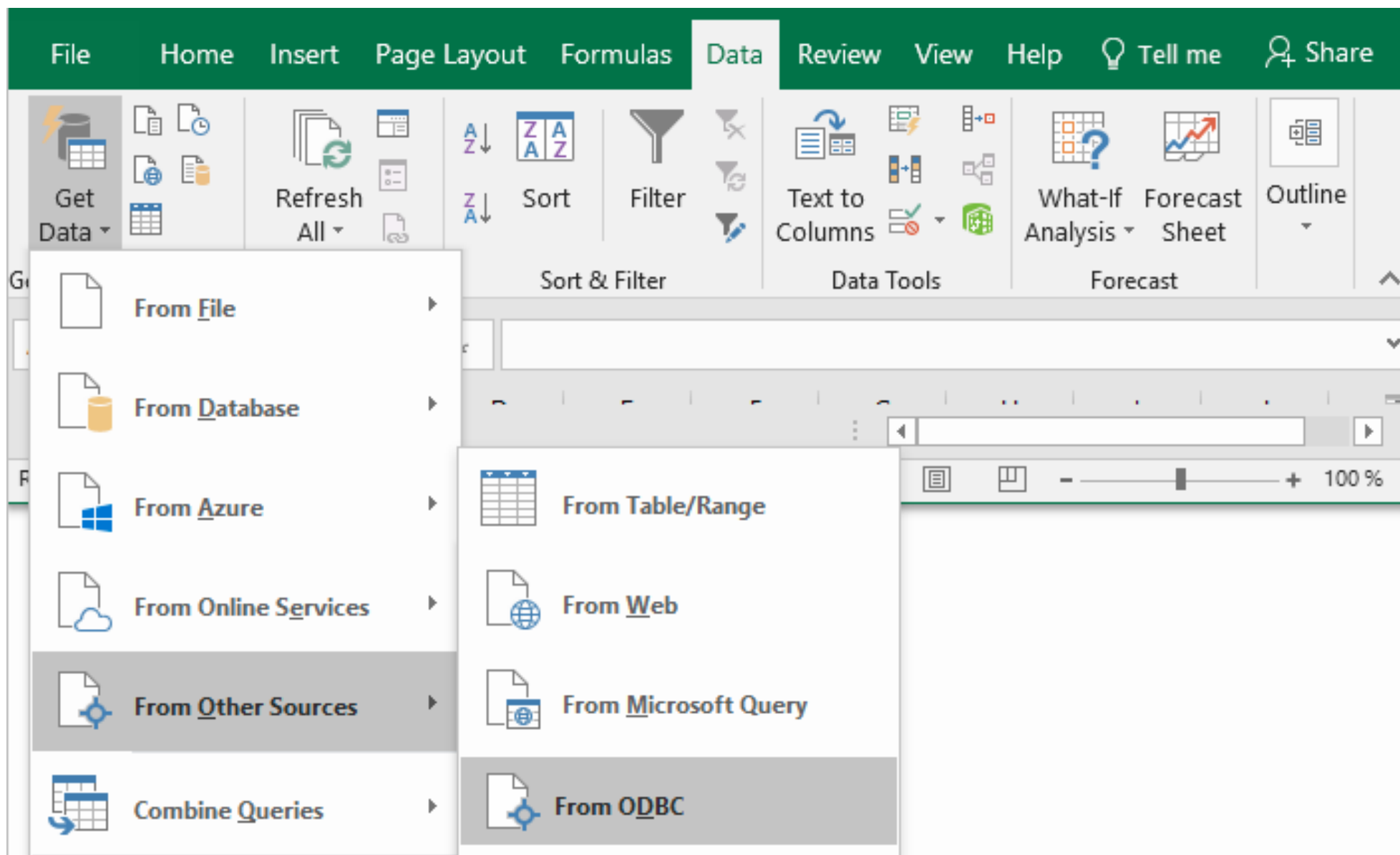
Demonstração

Conexão PostgreSQL com Excel

1. Instalar o driver ODBC para PostgreSQL usando o programa StackBuilder instalado junto com o SGBD.
2. Configurar a conexão no Excel usando o driver ODBC.
3. Autorizar Conexão com SQL
4. Carregar dados no Excel



4) Depois do passo 3, basta clicar consecutivamente em next até o fim do processo. Será aberta uma nova janela. Apenas clique next.



From ODBC

Data source name (DSN)

Devart ODBC Driver

▲ Advanced options

Connection string (non-credential properties) (optional) ⓘ

Example: Driver={SQL Server}; Server=(local); Database=Adventure Works

SQL statement (optional)

```
SELECT * FROM MyDatabase.MyTable;
```

Supported row reduction clauses (optional)

(None)

Detect

OK

Cancel

Choose your data source name in the From **ODBC dialogue (DSN)**. You can expand the **Advanced Options** dialogue box and input the connection string for your Data Source if you haven't yet established your **ODBC Driver** (without credentials, which are defined in the credentials dialogue box in the next step). You can also enter a SQL query that will be performed immediately after connecting to the data source. Click the **OK** button.

ODBC driver



Default or Custom

 dsn=ODBC Driver

Don't specify any credentials or only connection string properties.

Credential connection string properties (optional) ⓘ

Select Database and input your credentials in the dialog box, then click **Connect** if you're using a database **Username** or **Password**. Select **Default** or **Custom** and press Connect if your database is not password-protected or if you've previously entered your credentials in the **ODBC** Data Source settings.

Back

Connect

Cancel

Windows

Database

Select the table from which you wish to retrieve data in the pop-up box and click on **Load**.

Navigator

Select multiple items

Display Options ▾

- char_test
- crgrid_test
- customer4
- dept
- emp
- fe0053
- fish

emp

empno	ename	job	mgr	hiredate	sal
7369	SMITH	CLERK	7902	17.12.1980 0:00:00	
7499	ALLEN	SALESMAN	7698	20.02.1981 0:00:00	
7521	WARD	SALESMAN	7698	22.02.1981 0:00:00	
7566	JONES	MANAGER	7839	02.04.1981 0:00:00	
7654	MARTIN	SALESMAN	7698	28.09.1981 0:00:00	
7698	BLAKE	MANAGER	7839	01.05.1981 0:00:00	
7782	CLARK	MANAGER	7839	09.06.1981 0:00:00	
7788	SCOTT	ANALYST	7566	13.07.1987 0:00:00	
7839	KING	PRESIDENT	null	17.11.1981 0:00:00	

Select Related Tables

Load ▾

Transform Data

Cancel

File Home Insert Page Layout Formulas Data Review View Help Table Design Query Tell me Share

H1 :

	A	B	C	D	E	F	G	H
1	empno	ename	job	mgr	hiredate	sal	comm	deptno
2	7369	SMITH	CLERK		17.12.1980 0:00	800		20
3	7499	ALLEN	SALESMAN	7698	20.02.1981 0:00	1600	300	30
4	7521	WARD	SALESMAN	7698	22.02.1981 0:00	1250	500	30
5	7566	JONES	MANAGER	7839	02.04.1981 0:00	2975		20
6	7654	MARTIN	SALESMAN	7698	28.09.1981 0:00	1250	1400	30
7	7698	BLAKE	MANAGER	7839	01.05.1981 0:00	2850		30
8	7782	CLARK	MANAGER	7839	09.06.1981 0:00	2450		10
9	7788	SCOTT	ANALYST	7566	13.07.1987 0:00	3000		20
10	7839	KING	PRESIDENT		17.11.1981 0:00	5000		10

Sheet12 Sheet1

The table's data will be displayed in an Excel spreadsheet, where you can interact with it further.

Referências sobre como se Conectar ao Excel

1. <https://docs.microsoft.com/pt-br/sql/integration-services/import-export-data/connect-to-a-postgresql-data-source-sql-server-import-and-export-wizard?view=sql-server-ver16>
2. <https://hevodata.com/learn/excel-to-postgresql/#:~:text=DAY%20FREE%20TRIAL!-,Methods%20to%20Connect%20Excel%20to%20PostgreSQL,-There%20are%20many>