

CSI 2132 Lab#1

- Setting up PostgreSQL

Presented by: Rana Khalil, 15 Jan 2018

About Me

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Updates / Comments

- Lab attendance is mandatory starting next week
- Attend the lab section you're registered in

Outline

- Overview of PostgreSQL
- Using pgAdmin 4 in SITE labs
- Setting up pgAdmin 4 in your home computer.
- Overview of pgAdmin

OVERVIEW OF POSTGRESQL

PostgreSQL

- It is a powerful, open source object-relational database management system (ORDBMS)
- Since it is open source, it is not controlled by any single company. Thus, its development relies on the global community of developers and companies
- We can download, install, use and inspect its source code at no cost.

Software Tools:

- We will be using the following software products in this course:
 - PostgreSQL (database server)
 - pgAdmin 4 (client tool)
- **PostgreSQL** is the core DBMS, including command line tools, programming language libraries etc. SITE already has a PostgreSQL server, and we will connect to it regularly.
- **pgAdmin 4** is the graphical user interface(client tool) we use to connect to our database located in SITE server.

Your PostgreSQL Account

- SITE's PostgreSQL server already created accounts for you.
- Your login is the standard Infoweb account name, i.e. if your email is rkhal101@uottawa.ca, then your username is rkhal101.
- Your password is the one you use to log into the SITE computers.
- First-time users need to run the AUTOPASS feature in SITE computers to create their username and password.

SETTING UP PGADMIN 4

Using pgAdmin 4 at SITE

- pgAdmin is already installed in SITE computer labs.
- Go to
 - Start Menu > **All Programs** > **Software Development** > **pgAdmin 4** > **pgAdmin 4 v2**
- Under **Quick Links** click on **Add New Server**

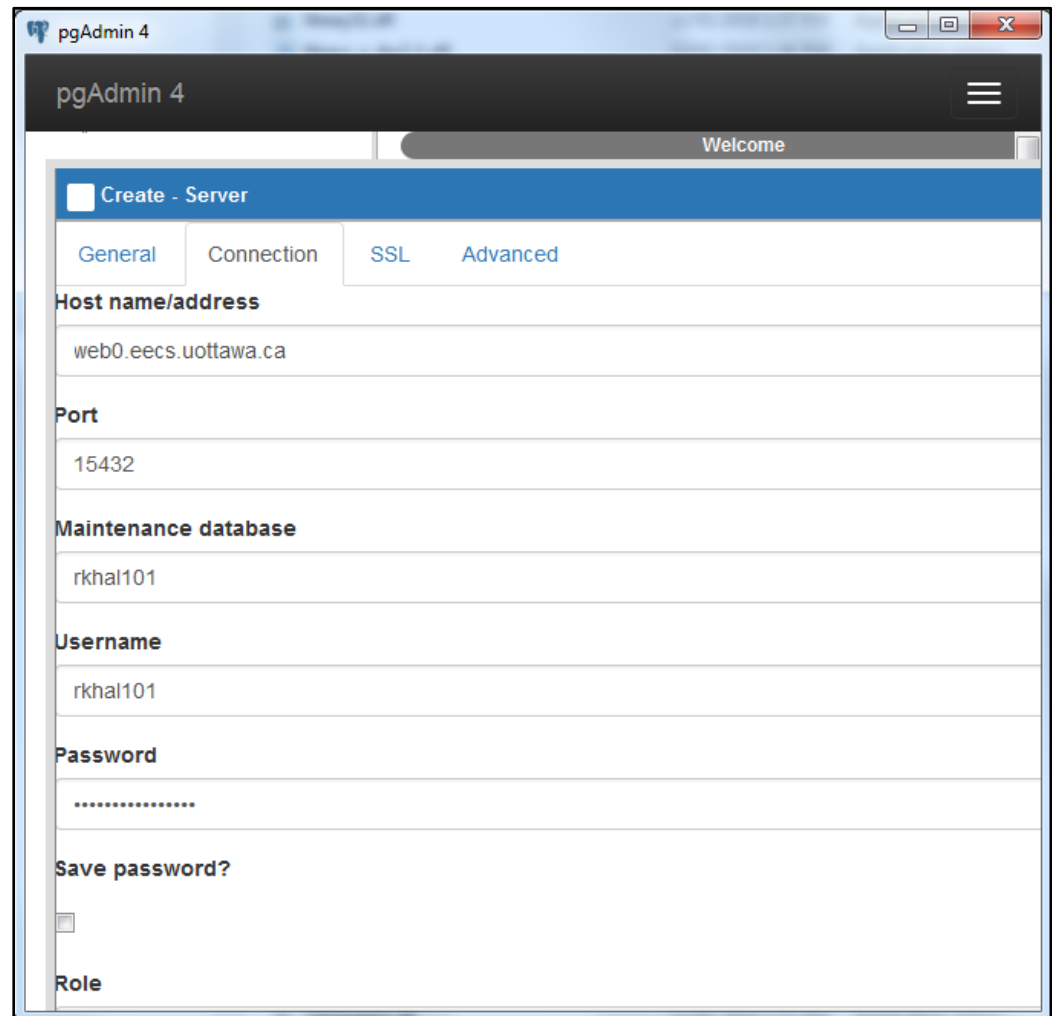
Server Parameters for SITE

General Tab

- **Name:** Anything you want

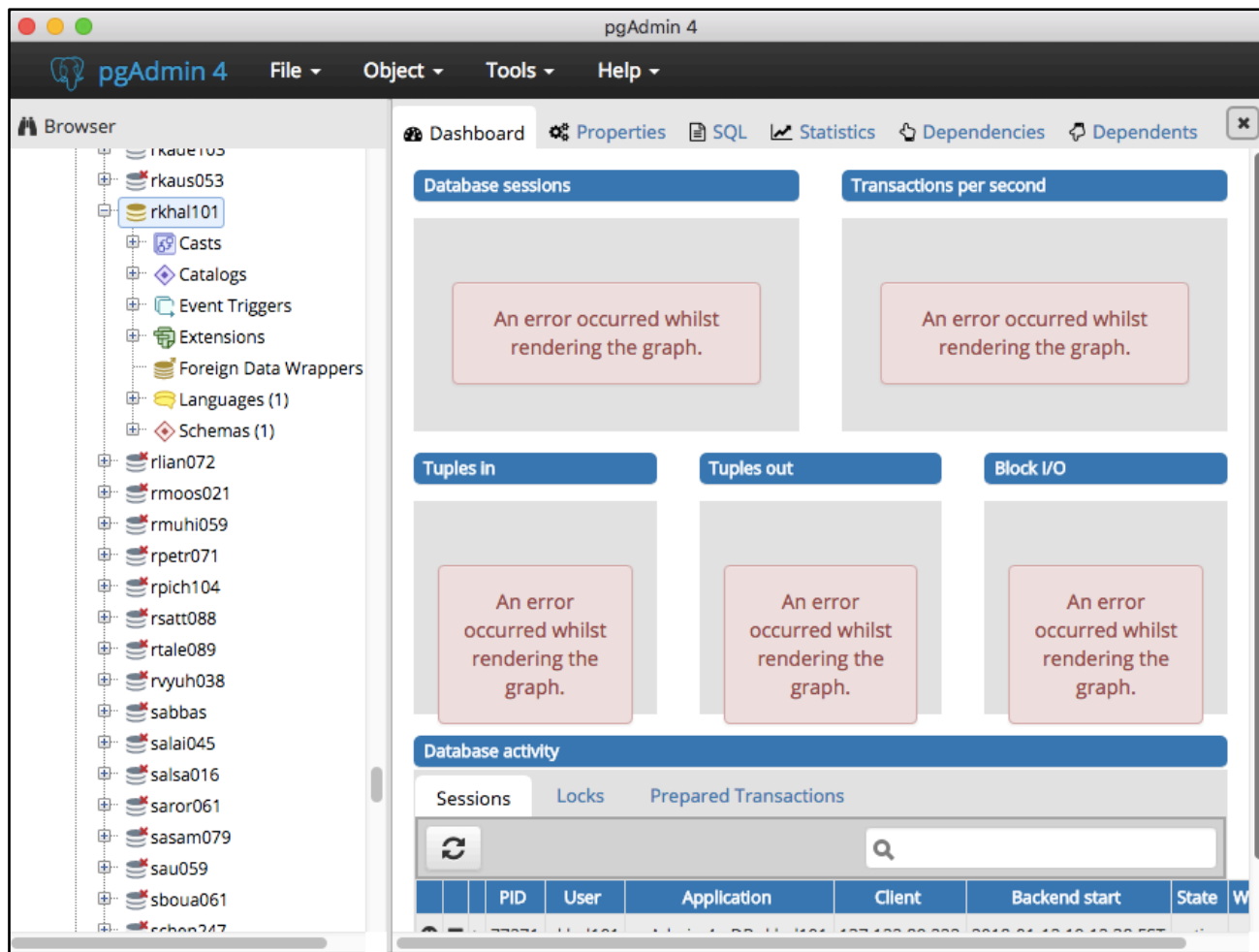
Connection Tab

- **Host name/address:** web0.eecs.uottawa.ca
- **Port:** 15432
- **Maintenance DB & Username:** Your SITE account's username
- **Password:** Your SITE account's password



The screenshot shows the pgAdmin 4 'Create - Server' dialog box with the 'Connection' tab selected. The 'General' tab is also visible. The 'Host name/address' field contains 'web0.eecs.uottawa.ca'. The 'Port' field contains '15432'. The 'Maintenance database' field contains 'rkhal101'. The 'Username' field contains 'rkhal101'. The 'Password' field is masked with dots. The 'Save password?' checkbox is unchecked. The 'Role' field is empty.

Field	Value
Host name/address	web0.eecs.uottawa.ca
Port	15432
Maintenance database	rkhal101
Username	rkhal101
Password
Save password?	<input type="checkbox"/>
Role	



Successful connection and pgAdmin GUI.

Note that you only have access to the DB associated with your SITE account.

Setting up and using pgAdmin 4 from your home

- Go to
 - <https://www.pgadmin.org/download/>
- Click on the PostgreSQL mirror network link.
- Select the latest version (v2.1)
- Select your operating system (e.g. macos)
 - Click on pgadmin4-2.1.dmg (depends on your operating system)
- Extract the contents of the compressed file
 - Follow the installation instructions

Home Setup (Continued)

- Open pgAdmin 4
- In the **Dashboard** tab click on **Add New Server**
 - Warning: You may need to restart pgAdmin after adding the server.

Server Parameters for Home (same as SITE)

General Tab

- **Name:** Anything you want

Connection Tab

- **Host name/address:**
web0.eecs.uottawa.ca
- **Port:** 15432
- **Maintenance DB & Username:** Your SITE account's username
- **Password:** Your SITE account's password

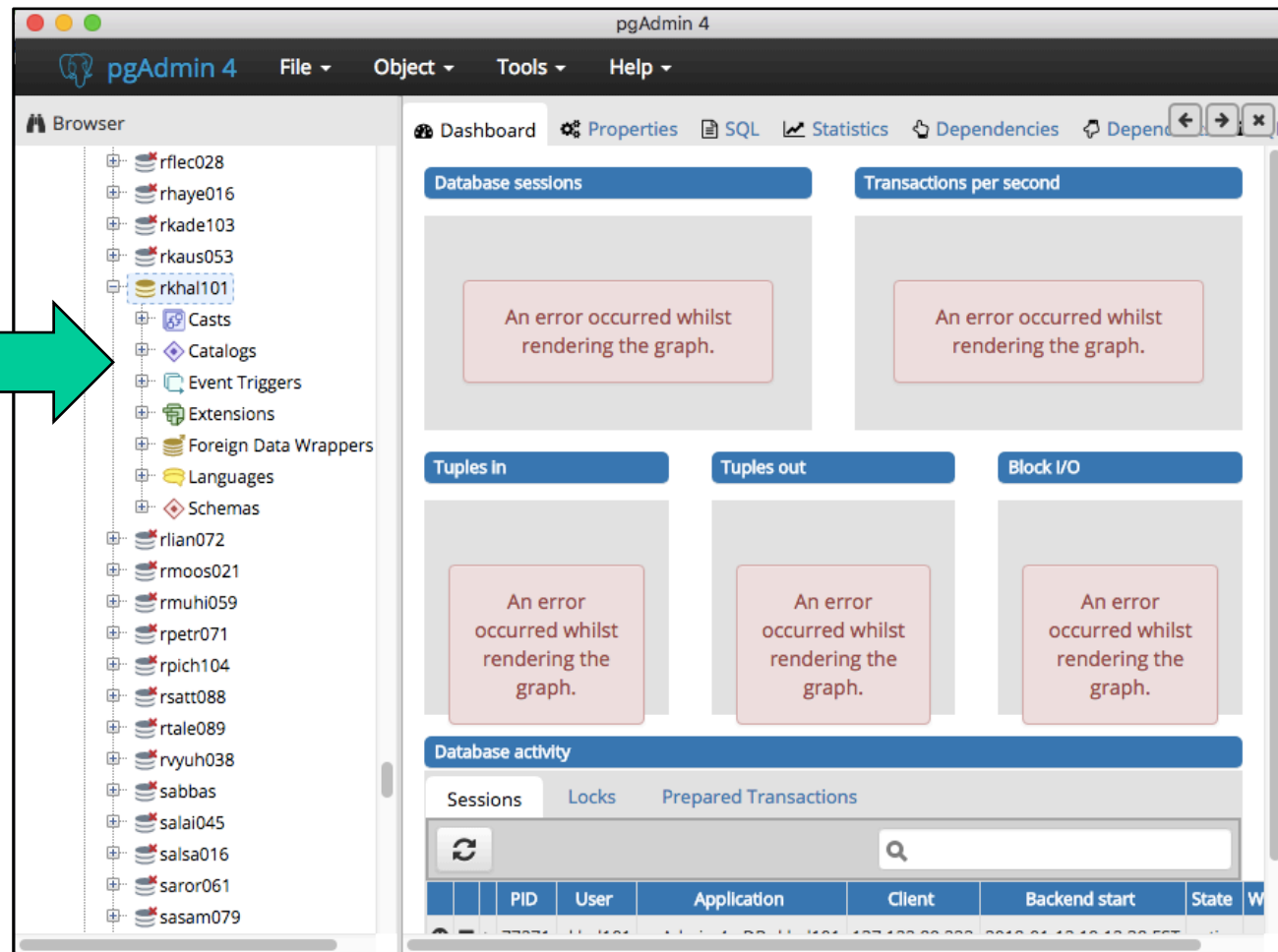
The screenshot shows the 'pgAdmin 4' window with the 'Create - Server' dialog box open. The 'General' tab is selected, showing the following fields:

- Host name/address:** web0.eecs.uottawa.ca
- Port:** 15432
- Maintenance database:** rkhal101
- Username:** rkhal101
- Password:** (masked with dots)
- Save password?:** (unchecked checkbox)
- Role:** (empty field)

OVERVIEW OF PGADMIN

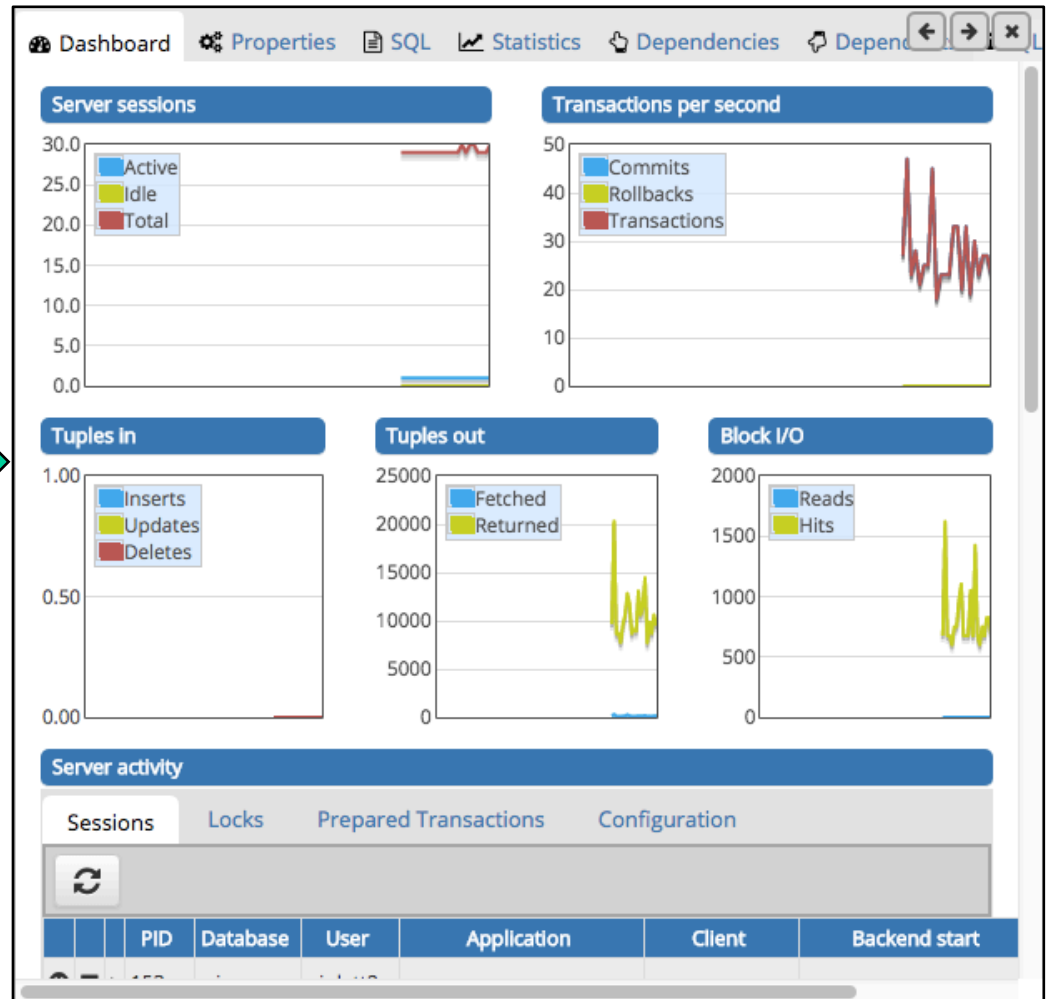
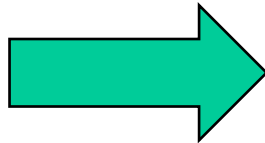
Main Window - Tree Control

Server tree and the objects that reside on a server.



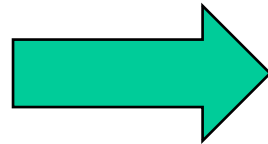
Main Window - Dashboard

Provides an active analysis of the usage statistics for the selected server or database



Main Window - Properties

Displays
information
about the object
selected



Dashboard Properties SQL Statistics Dependencies Depend...

General

Database rkhal101

OID 4565454

Owner rkhal101

Comment

Security

Privileges

Default TABLE privileges

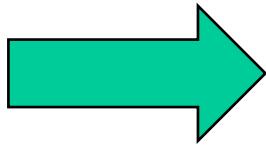
Default SEQUENCE privileges

Default FUNCTION privileges

Default TYPE

Main Window - SQL

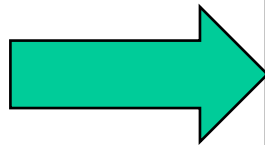
Displays the SQL script that created the highlighted object, and a (commented out) SQL statement that will *DROP* the selected object.



```
1 -- Database: rkhal101
2
3 -- DROP DATABASE rkhal101;
4
5 CREATE DATABASE rkhal101
6 WITH
7     OWNER = rkhal101
8     ENCODING = 'LATIN1'
9     LC_COLLATE = 'C'
10    LC_CTYPE = 'C'
11    TABLESPACE = pg_default
12    CONNECTION LIMIT = -1;
```

Main Window - Statistics

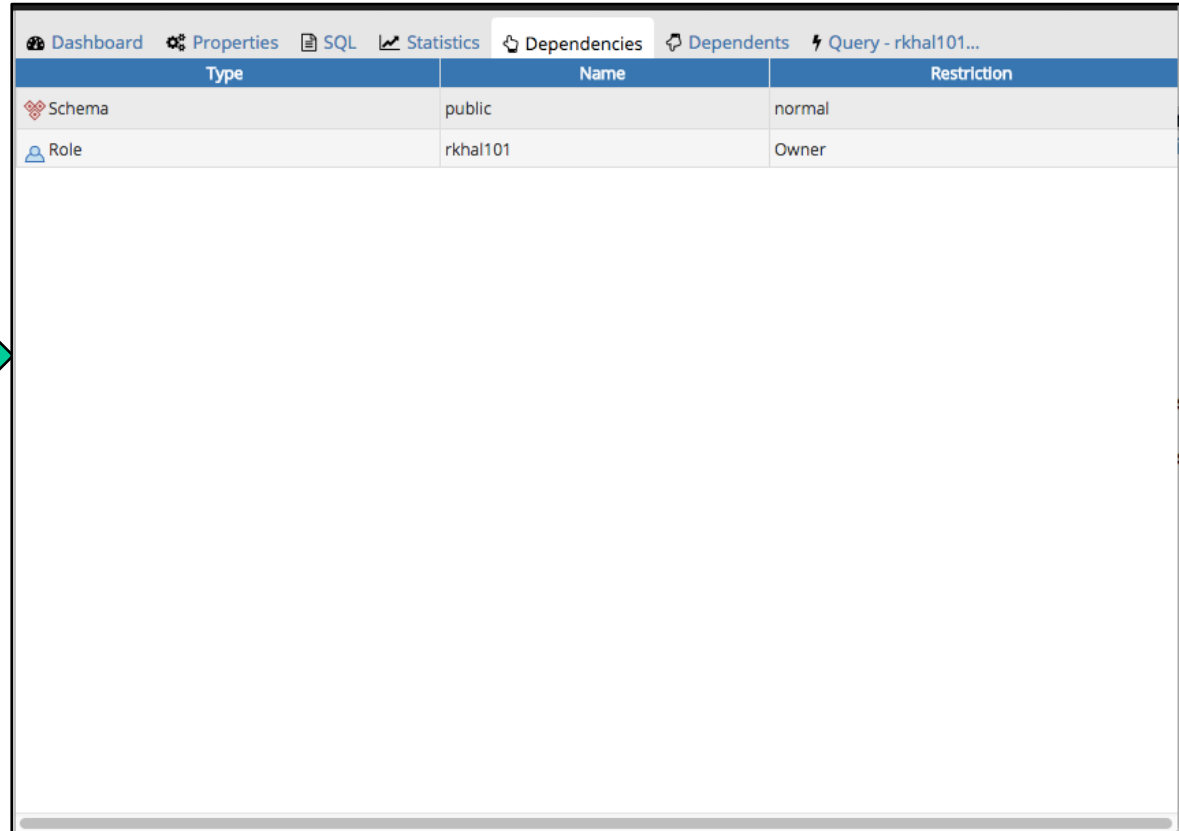
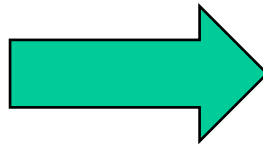
Displays the statistics gathered for each object on the tree control



Statistics	
Statistics	Value
Backends	1
Xact committed	29331
Xact rolled back	9
Blocks read	14310
Blocks hit	1032505
Tuples returned	12440097
Tuples fetched	186699
Tuples inserted	111
Tuples updated	3645
Tuples deleted	99
Last statistics reset	2018-01-04 03:17:41.616008-05
Tablespace conflicts	0
Lock conflicts	0
Snapshot conflicts	0
Bufferpin conflicts	0
Deadlock conflicts	0
Temporary files	0
Size of temporary files	0 bytes
Deadlocks	0
Block read time	0

Main Window - Dependencies

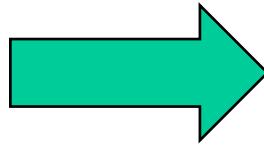
Displays the objects on which the currently selected object depends.



Type	Name	Restriction
Schema	public	normal
Role	rkhal101	Owner

Main Window - Dependents

Displays a table of objects that depend on the object currently selected in the *pgAdmin* browser.



Type	Name	Restriction
Primary Key	public.persons_pkey	auto
Foreign Key	public.orders.orders_personid_fkey	normal

The Query Tool

- Can be accessed through **Tools > Query Tool**

pgAdmin 4

File Object Tools Help

Browser

- Domains
- FTS Configuratio
- FTS Dictionaries
- FTS Parsers
- FTS Templates
- Foreign Tables
- Functions
- Materialized Vie
- 1.3 Sequences
- Tables (4)
 - bla
 - class_names
 - orders
 - persons
- Columns
- Constrai
- Indexes
- Rules
- Triggers
- Trigger Function
- Types

Dashboard Properties SQL Statistics Dependencies Dependents Query - rkhal101 on rkhal101@csi2132_lab1

rkhal101 on rkhal101@csi2132_lab1

```

1  SELECT * FROM persons
2  ORDER by age;
    
```

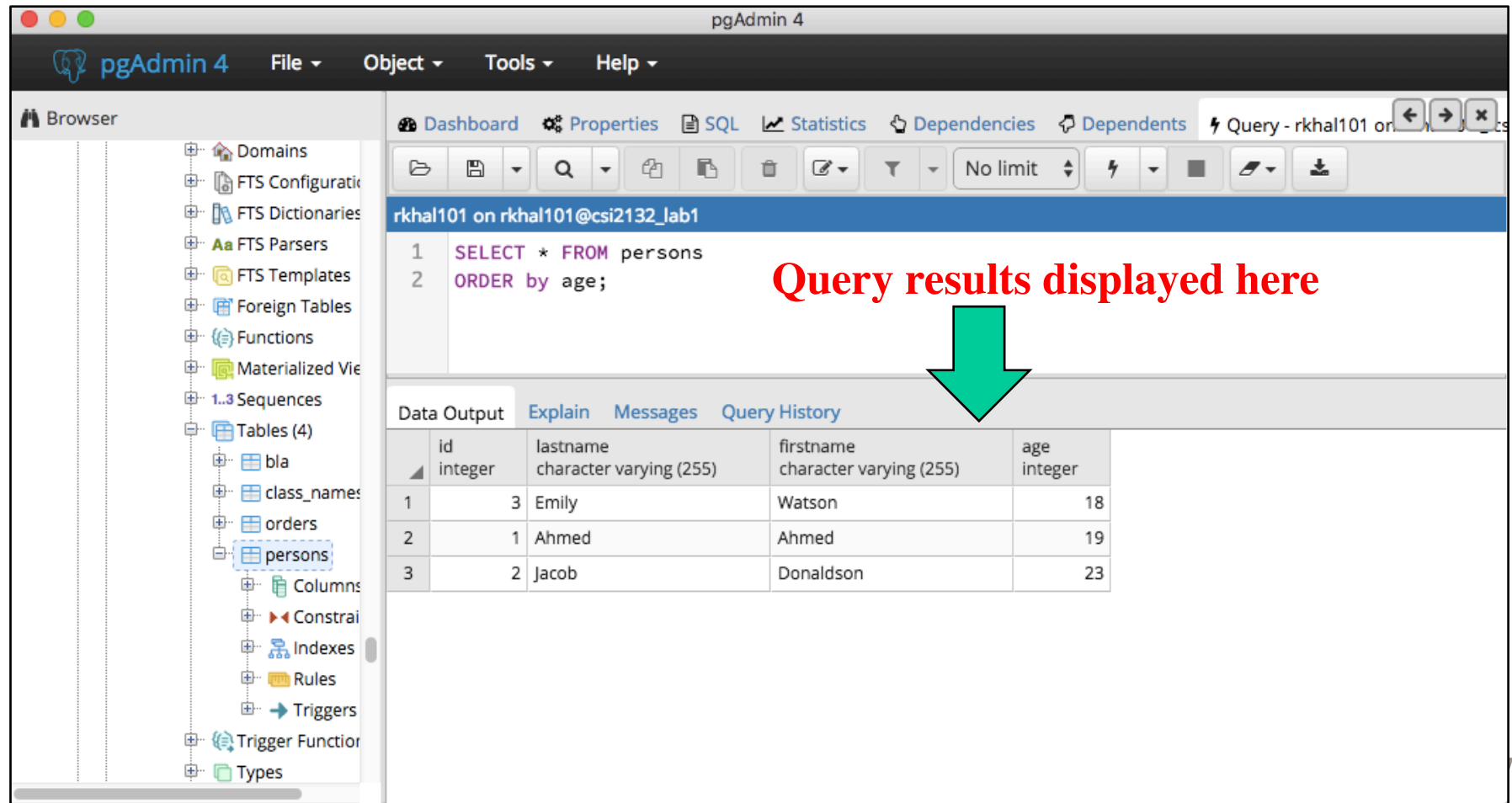
Type SQL statements to create the query

Data Output Explain Messages Query History

	id integer	lastname character varying (255)	firstname character varying (255)	age integer
1	3	Emily	Watson	18
2	1	Ahmed	Ahmed	19
3	2	Jacob	Donaldson	23

The Query Tool

- Can be accessed through **Tools > Query Tool**



The screenshot shows the pgAdmin 4 interface. On the left is the 'Browser' pane showing a tree of database objects, with 'persons' under 'Tables (4)' selected. The main pane shows the 'Query Tool' for the 'rkhal101' user on the 'rkhal101@csi2132_lab1' database. The SQL query entered is:

```
1 SELECT * FROM persons
2 ORDER by age;
```

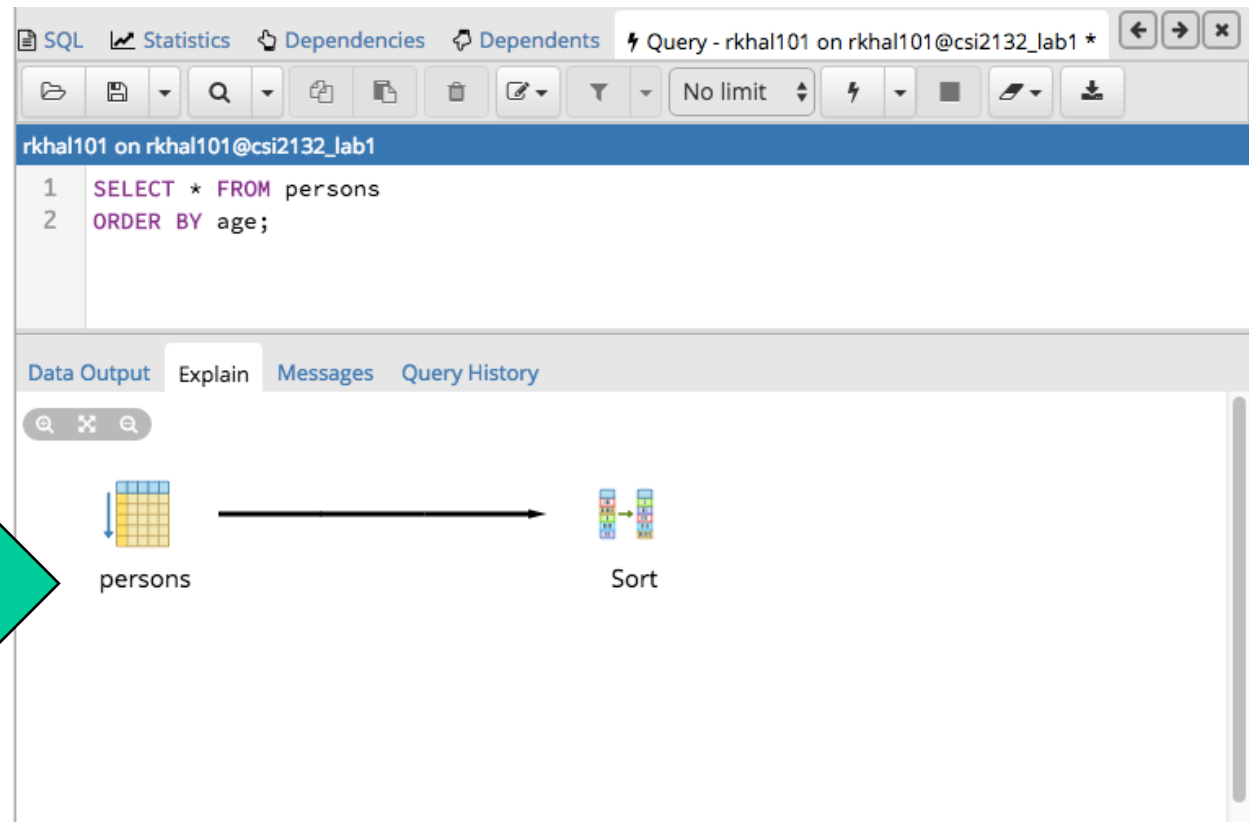
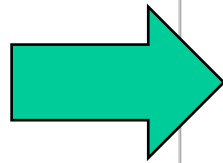
Below the query editor, the 'Data Output' tab is active, displaying the results of the query in a table. A red arrow points to the table with the text 'Query results displayed here'.

	id integer	lastname character varying (255)	firstname character varying (255)	age integer
1	3	Emily	Watson	18
2	1	Ahmed	Ahmed	19
3	2	Jacob	Donaldson	23

The Query Tool

- Can be accessed through **Tools > Query Tool**

Schematic representation of the DBMS operations via the EXPLAIN command



For Detailed Information

- About PostgreSQL:
 - <https://www.postgresql.org/>
- About pgAdmin 4:
 - <https://www.pgadmin.org/>
- Connectivity for remote and SITE users
 - <http://www.site.uottawa.ca/local/labinfo/software/postgresql.html>