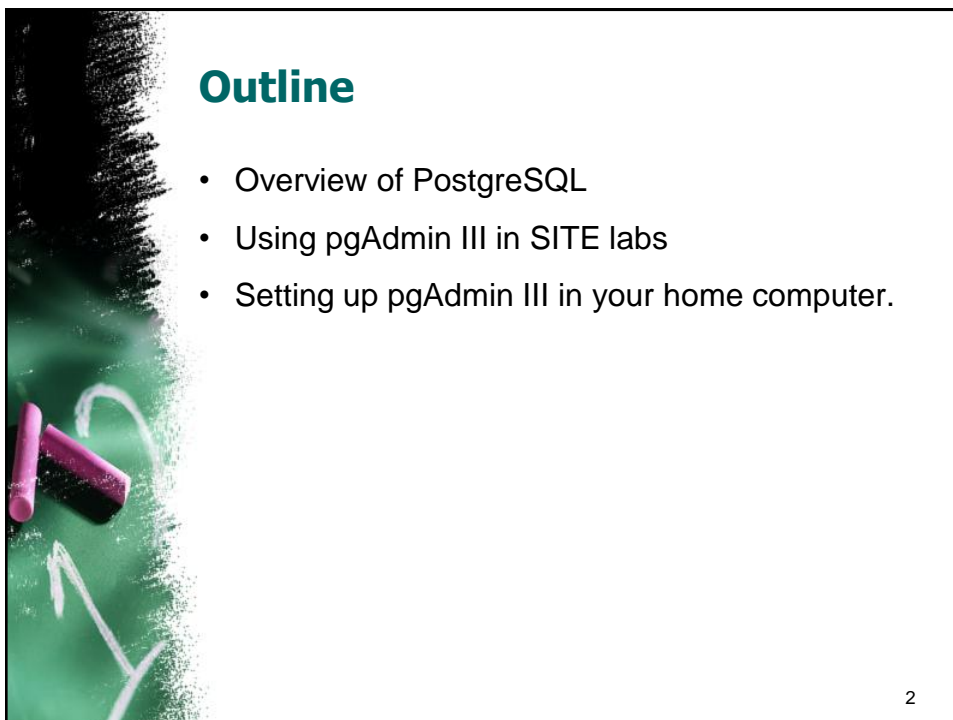


CSI 2132 Lab1

Setting up PostgreSQL



Outline

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



PostgreSQL

- It is a powerful, open source relational database management system (RDBMS).
- 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.

3



PostgreSQL Components

- We will be using the following software products in this course:
 - *PostgreSQL (database server)*
 - *pgAdmin III (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 III** is the graphical user interface (client tool) we use to connect to our database located in SITE server.

4



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 abc42@uottawa.ca, then your username is **abc42**.
- 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.

5



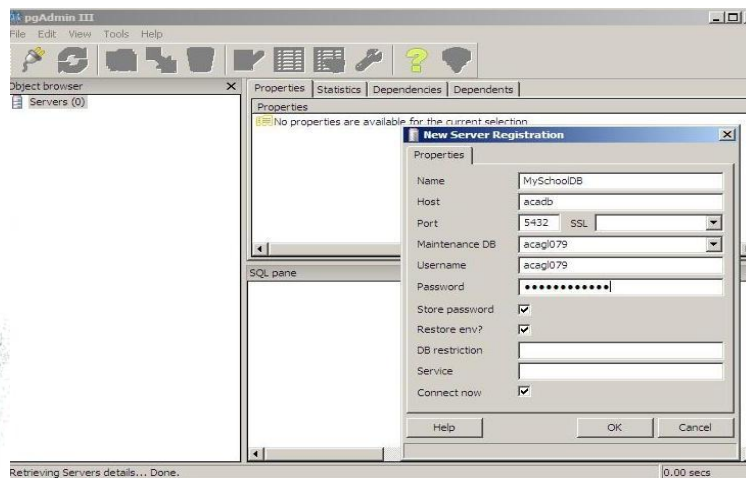
SETTING UP PGADMIN

6

Using pgAdmin III at SITE

- pgAdmin is already installed in SITE 2060 computer labs.
- Go to
 - *Start Menu* → *All Programs* → *EECS* → *pgAdmin III 1.4* → *pgAdmin III*
- Click on
 - *File* → *Add Server*

7



Server Parameters for SITE

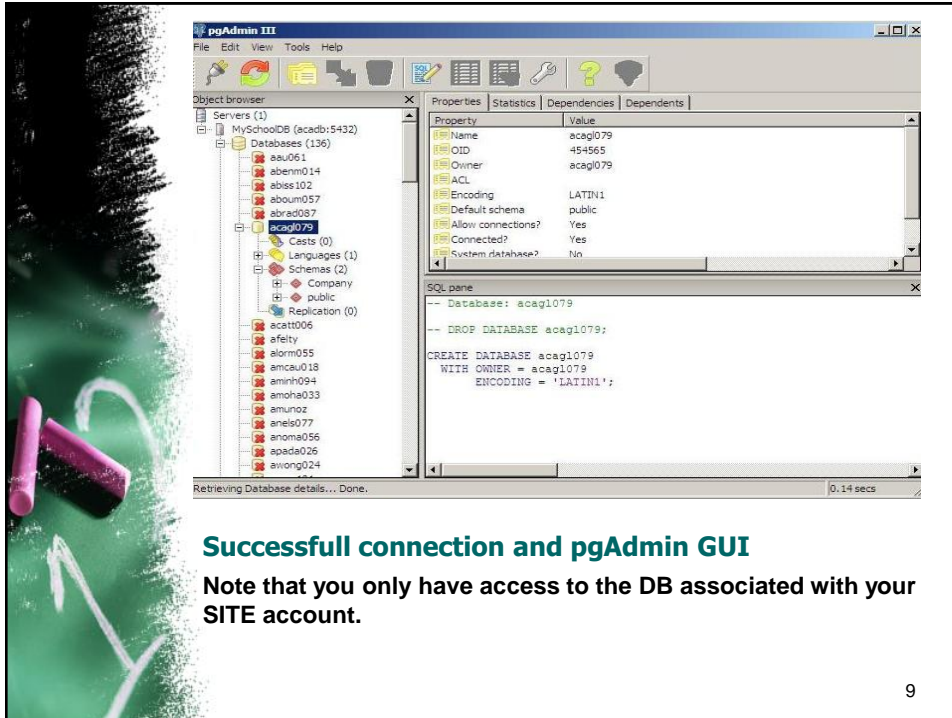
Name: **Anything you want**

Host: **acadb** Port: **5432**

Maintenance DB and Username: **Your SITE account's username**

Password: **Your SITE account's password**

8



Successfull connection and pgAdmin GUI

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

9

Setting up and using pgAdmin III from your home

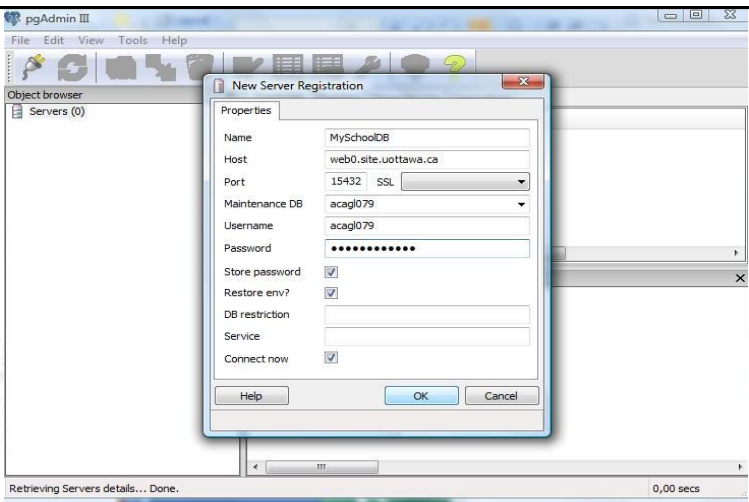
- Go to
 - <http://www.pgadmin.org/download/>
- Click on the [PostgreSQL mirror network](#) link.
- Select the latest version (v1.8.4)
- Select your operating system (e.g. win32)
- Click on **pgAdmin v1.8.4**
 - Click on *pgadmin3-1.8.4.zip*
 - Download it to disk
- Extract the contents of the compressed file
 - Run the *.msi* file and follow the instructions
 - Then run the *update.bat* file

10

Home Setup (Continued)

- Run:
 - *Start Menu → Program Files → pgAdmin III*
- Click on File → **Add Server**
 - *Warning: You may need to restart pgAdmin after adding the server.*

11



The screenshot shows the 'New Server Registration' dialog box in pgAdmin III. The 'Properties' tab is active, showing the following fields and values:

Field	Value
Name	MySchoolDB
Host	web0.site.uottawa.ca
Port	15432
Maintenance DB	acagi079
Username	acagi079
Password
Store password	<input checked="" type="checkbox"/>
Restore env?	<input checked="" type="checkbox"/>
DB restriction	
Service	
Connect now	<input checked="" type="checkbox"/>

Buttons at the bottom: Help, OK, Cancel.

Below the dialog box, the status bar shows: Retrieving Servers details... Done. 0,00 secs

Server Parameters for Home installation

Name: **Anything you want**

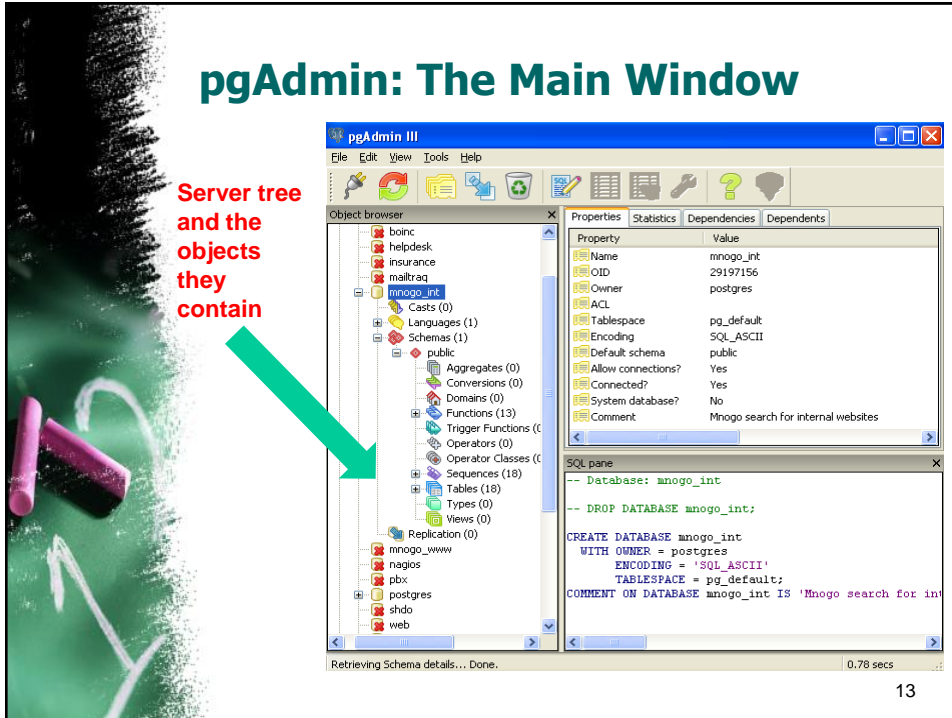
Host: **web0.site.uottawa.ca** **Port:** **15432**

Maintenance DB and Username: **Your SITE account's username**

Password: **Your SITE account's password**

12

pgAdmin: The Main Window



Server tree and the objects they contain

The screenshot shows the pgAdmin III interface. The 'Object browser' on the left displays a tree of database objects. A green arrow points from the text 'Server tree and the objects they contain' to the 'mnogo_int' database in the tree. The 'Properties' pane on the right shows details for the selected database, and the 'SQL pane' at the bottom shows SQL commands for creating and dropping the database.

Property	Value
Name	mnogo_int
OID	29197156
Owner	postgres
ACL	
Tablespace	pg_default
Encoding	SQL_ASCII
Default schema	public
Allow connections?	Yes
Connected?	Yes
System database?	No
Comment	Mnogo search for internal websites

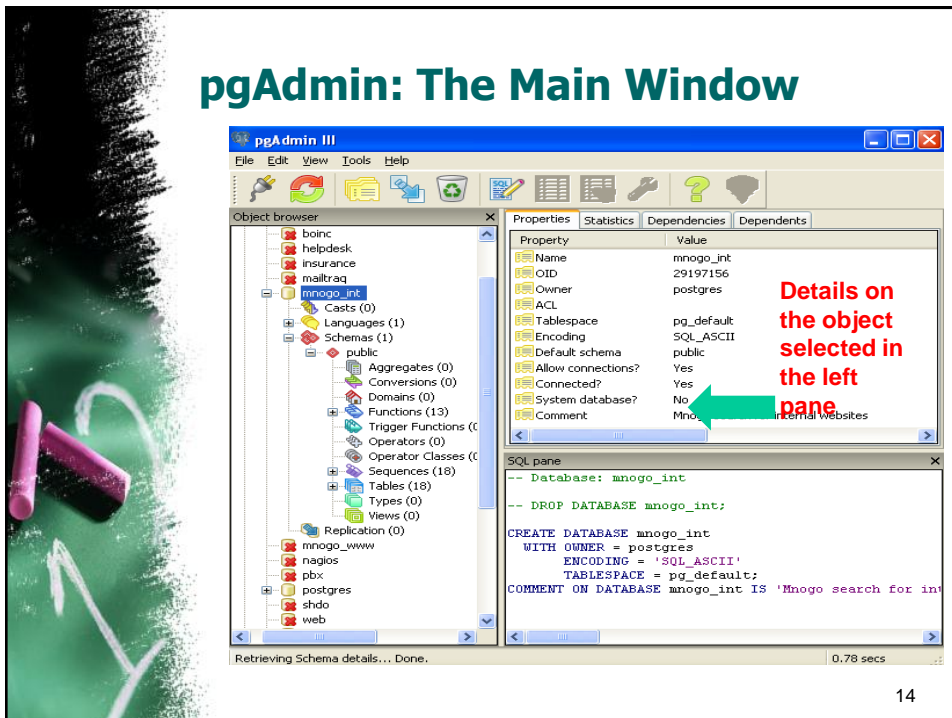
```
-- Database: mnogo_int
-- DROP DATABASE mnogo_int;

CREATE DATABASE mnogo_int
WITH OWNER = postgres
ENCODING = 'SQL_ASCII'
TABLESPACE = pg_default;
COMMENT ON DATABASE mnogo_int IS 'Mnogo search for internal websites';
```

Retrieving Schema details... Done. 0.78 secs

13

pgAdmin: The Main Window



Details on the object selected in the left pane

The screenshot shows the pgAdmin III interface. The 'Object browser' on the left displays a tree of database objects. A green arrow points from the text 'Details on the object selected in the left pane' to the 'mnogo_int' database in the tree. The 'Properties' pane on the right shows details for the selected database, and the 'SQL pane' at the bottom shows SQL commands for creating and dropping the database.

Property	Value
Name	mnogo_int
OID	29197156
Owner	postgres
ACL	
Tablespace	pg_default
Encoding	SQL_ASCII
Default schema	public
Allow connections?	Yes
Connected?	Yes
System database?	No
Comment	Mnogo search for internal websites

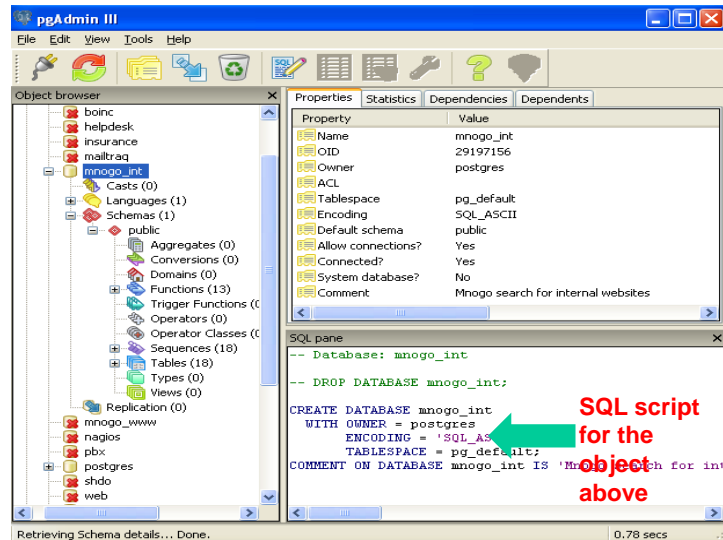
```
-- Database: mnogo_int
-- DROP DATABASE mnogo_int;

CREATE DATABASE mnogo_int
WITH OWNER = postgres
ENCODING = 'SQL_ASCII'
TABLESPACE = pg_default;
COMMENT ON DATABASE mnogo_int IS 'Mnogo search for internal websites';
```

Retrieving Schema details... Done. 0.78 secs

14

pgAdmin: The Main Window

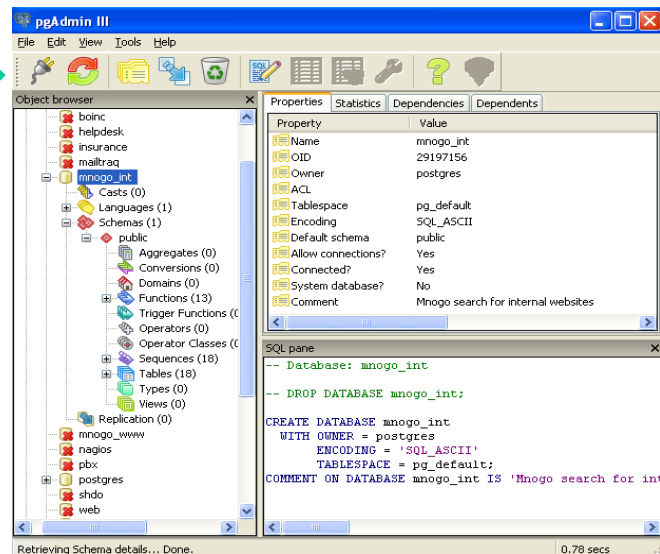


15

pgAdmin: The Main Window

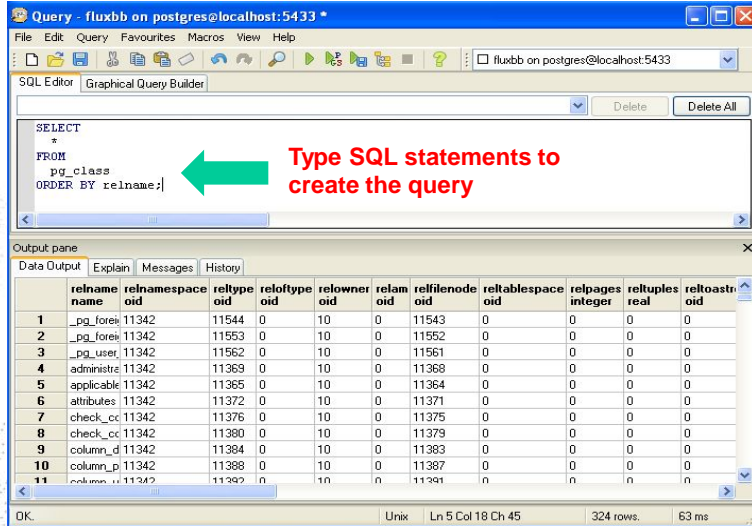
Main
Toolbar:

Performs
common
general
and object-
specific
actions



16

pgAdmin: The Query Tool



Query - fluxbb on postgres@localhost:5433 *

File Edit Query Favourites Macros View Help

SQL Editor Graphical Query Builder

SELECT
*
FROM
pg_class
ORDER BY relname;

Output pane

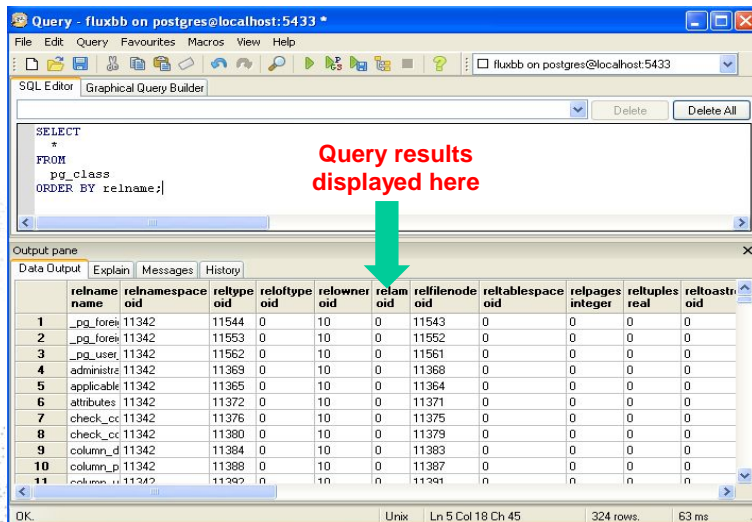
Data Output Explain Messages History

	relname name	relnamespace oid	reltype oid	relotstype oid	relowner oid	relam oid	relfilenode oid	reltablespace oid	relpages integer	reltuples real	reltoastn oid
1	_pg_foreign	11342	11544	0	10	0	11543	0	0	0	0
2	_pg_foreign	11342	11553	0	10	0	11552	0	0	0	0
3	_pg_user	11342	11562	0	10	0	11561	0	0	0	0
4	adminstre	11342	11369	0	10	0	11368	0	0	0	0
5	applicable	11342	11365	0	10	0	11364	0	0	0	0
6	attributes	11342	11372	0	10	0	11371	0	0	0	0
7	check_cc	11342	11376	0	10	0	11375	0	0	0	0
8	check_cc	11342	11380	0	10	0	11379	0	0	0	0
9	column_d	11342	11384	0	10	0	11383	0	0	0	0
10	column_p	11342	11388	0	10	0	11387	0	0	0	0
11	column_v	11342	11392	0	10	0	11391	0	0	0	0

OK. Unix Ln 5 Col 18 Ch 45 324 rows. 63 ms

17

pgAdmin: The Query Tool



Query - fluxbb on postgres@localhost:5433 *

File Edit Query Favourites Macros View Help

SQL Editor Graphical Query Builder

SELECT
*
FROM
pg_class
ORDER BY relname;

Output pane

Data Output Explain Messages History

	relname name	relnamespace oid	reltype oid	relotstype oid	relowner oid	relam oid	relfilenode oid	reltablespace oid	relpages integer	reltuples real	reltoastn oid
1	_pg_foreign	11342	11544	0	10	0	11543	0	0	0	0
2	_pg_foreign	11342	11553	0	10	0	11552	0	0	0	0
3	_pg_user	11342	11562	0	10	0	11561	0	0	0	0
4	adminstre	11342	11369	0	10	0	11368	0	0	0	0
5	applicable	11342	11365	0	10	0	11364	0	0	0	0
6	attributes	11342	11372	0	10	0	11371	0	0	0	0
7	check_cc	11342	11376	0	10	0	11375	0	0	0	0
8	check_cc	11342	11380	0	10	0	11379	0	0	0	0
9	column_d	11342	11384	0	10	0	11383	0	0	0	0
10	column_p	11342	11388	0	10	0	11387	0	0	0	0
11	column_v	11342	11392	0	10	0	11391	0	0	0	0

OK. Unix Ln 5 Col 18 Ch 45 324 rows. 63 ms

18

pgAdmin: The Query Tool

The screenshot shows the pgAdmin Query Tool interface. The SQL Editor contains the following query:

```
SELECT *
FROM
  pg_class c,
  pg_attribute a
WHERE
  a.attrelid = c.oid
ORDER BY relname;
```

The Output pane displays the EXPLAIN output, which is a schematic representation of the DBMS operations. The diagram shows the following execution plan:

```

graph LR
    pg_class[pg_class] --> Hash[Hash]
    pg_attribute[pg_attribute] --> HashJoin[Hash Join]
    Hash --> HashJoin
    HashJoin --> Sort[Sort]
  
```

A red arrow points from the text "Schematic representation of the DBMS operations via the EXPLAIN command" to the EXPLAIN output diagram.

19

pgAdmin: Edit Grid

Edit data stored
in a table or view

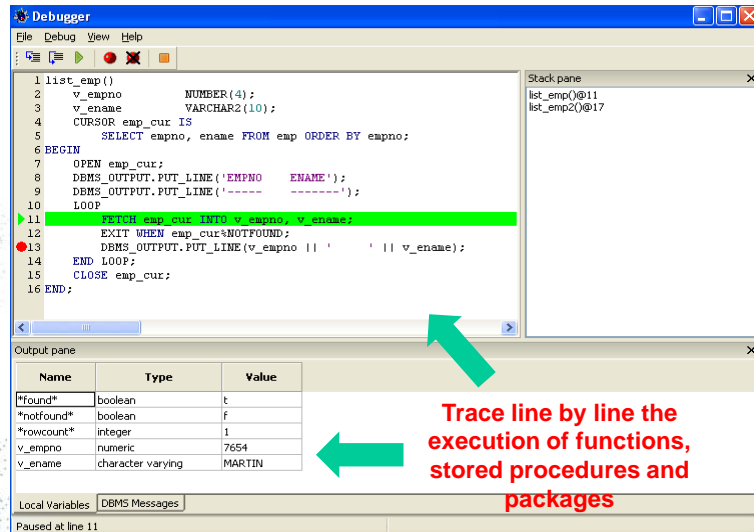
The screenshot shows the pgAdmin Edit Grid interface. The table contains the following data:

	oid	id [PK] integer	startip bigint	endip bigint	countrycode character(2)	country character var
1	1201766	68531	33996344	33996351	GB	UNITED KINGDC
2	1201767	68532	50331648	83886079	US	UNITED STATES
3	1201768	68533	94585424	94585439	SE	SWEDEN
4	1201769	68534	100663296	134217727	US	UNITED STATES
5	1201770	68535	121195296	121195327	IT	ITALY
6	1201771	68536	134217728	167772159	US	UNITED STATES
7	1201772	68537	152305664	152338431	GB	UNITED KINGDC
8	1201773	68538	167772160	184549375	NL	NETHERLANDS
9	1201774	68539	184549376	218103807	US	UNITED STATES
10	1201775	68540	205500988	205500991	CA	CANADA
11	1201776	68541	205502668	205502671	US	UNITED STATES
12	1201777	68542	214858656	214858671	NL	NETHERLANDS
13	1201778	68543	218103808	234881023	US	UNITED STATES
14	1201779	68544	226293056	226293119	NL	NETHERLANDS
15	1201780	68545	251658240	268435455	FR	FRANCE

56642 rows.

20

pgAdmin: The Debugger



21

For Detailed Information

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

22