Spatial Databases and Data Management

Software, Connections and Passwords

Table of Contents

Note: you will be using a different username and password to connect to the CEGE0052 databases – this will take the form userX where X is the number next to your name on the sign in sheet.

Note: in this and later practicals it is important that you stick exactly to the schema and table names as they are written, as we will use these to make sure you are attending practical sessions.

If you get problems, first try and resolve them yourself – you should pay attention to detail, and check for obvious things like spelling mistakes, spelling column or table names incorrectly, missing brackets or quotation marks. Look carefully at the error message from PostGreSQL as this can be helpful – e.g. it might give you a line number.

If you cannot resolve the problem then ask for help in class or on the forum for that specific practical (available for up to 2 weeks after the date of the practical)

Software

We will be using the following software for this module. You have a number of options in terms of accessing the software:

1. All the software is installed on the UCL PCs in the cluster rooms
2. All the software is also available on the UCL DesktopAnywhere system (https://www.ucl.ac.uk/isd/services/computers/remote-access/desktopucl-anywhere)
3. You can install the software on your own machine.

NB: To work outside the UCL network you will first need to connect via the UCL VPN system (see below).

PG Admin 4

All practicals - PG Admin 4 from here (other operating systems also avail: https://www.postgresql.org/ftp/pgadmin/pgadmin4/v2.0/windows/

QGIS 2.18

Practical 3 onwards - QGIS 2.18 from here: http://qgis.org/downloads/QGIS-OSGeo4W-2.18.15-1-Setup-x86_64.exe (later versions of QGIS are available but 2.18 is what is installed on the UCL PCs so the instructions are tailored to 2.18)

FME

Practical 4 onwards - FME Desktop from here: https://www.safe.com/fme/fme-desktop/trial-download/ (sign up for a trial license but we also have a UCL license server – see below)

If you have downloaded and installed FME, the license server you need is (UCL VPN is required):

safelm.cege.ucl.ac.uk

UCL VPN

If you are working on your own machine, or working outside UCL, you will also need to use the UCL VPN system to connect into the UCL Network. This will allow you to connect to the FME license server and to the database – you can find instructions here:
http://www.ucl.ac.uk/isd/services/get-connected/remote-working/vpn

Notepad ++ or similar

For the practicals, and for your assignment, you should type all the SQL into a text file created in Notepad++, Sublime Text or another text editor, and then copy/paste it into PG Admin 4 Most operating systems have a text editor installed, but you can download one as follows:

- https://notepad-plus-plus.org/
- https://www.sublimetext.com/

NB – do not use Microsoft Word as the quotation marks will be incorrect.

Connecting to Desktop Anywhere in Birkbeck

In some cases, we may be holding practical sessions in a cluster room in Birkbeck University. This means that we first need to connect to the UCL Desktop Anywhere system first, via the Birkbeck System.

1. Log on to the Birkbeck PC with the following details:

   UserID :   ucluser
   Password :   T34ch1ng

2. Enter your UCL details into the Citrix receiver box:
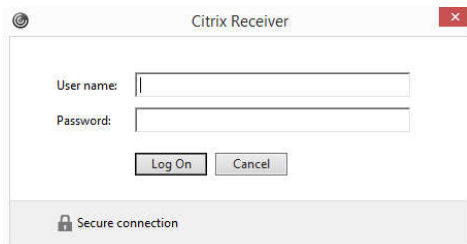
3. Desktop@UCL Anywhere will start and open in full screen. A black screen will appear for up to 20 seconds.

Connecting to PG Admin IV

We are using a database called PostgreSQL for all the following exercises. PostgreSQL has been in development for more than 15 years and is open source – in other words, experts from around the world can add additional functionality to the database and share this with other users. It supports standard database data types (integers, text, dates and so forth) and conforms to the ANSI:SQL 2008 standard.

Note:

Note that the database that you will use for these in-class exercises and for your assignment is hosted on a central server. This approach allows you to share data amongst multiple people (although in this case you don't have rights to each-other's data!).

Starting PG Admin 4 – Using the UCL System

1. If you are using the UCL system, log on to the Desktop Anywhere system by following the instructions you will find here (select the instructions for your operating system):

https://www.ucl.ac.uk/isd/services/computers/remote-access/desktopucl-anywhere/desktopucl-anywhere-how-to-guides

2. Logging in might take some time. Once logged in, you can start PG Admin 4

Starting PG Admin 4 – Installed on Your Machine

1. If you have installed PG Admin 4 on your own machine, it is likely that this will run inside a browser.

2. Open a browser (e.g. Edge, Chrome) and go to: http://127.0.0.1:49714/browser/ (NB: port number and URL might be different on your machine –make a note when you first do the installation)

Connecting to Your Database

You will need your databases user number – this is the number by your name on the sign-in sheet

1. Once you start PG Admin, click on OBJECT > CREATE > SERVER. You will see the following interface (left hand side):
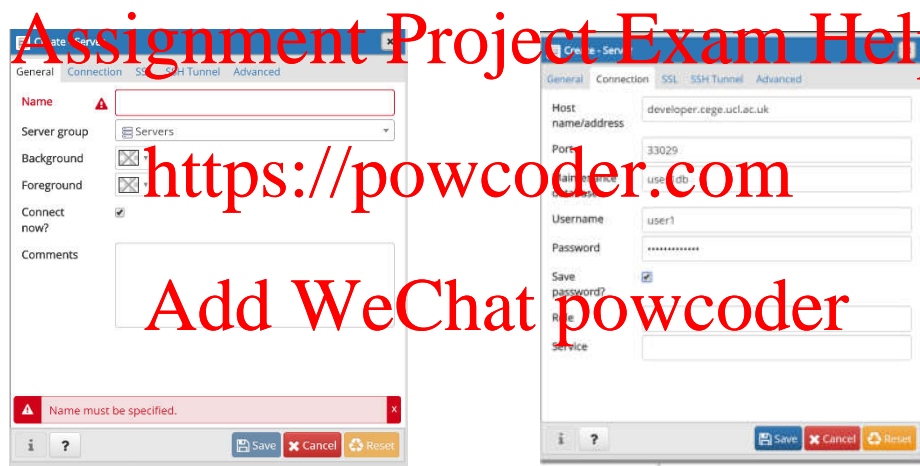

2. Name your connection ucfsxxx (use your UCL user ID as the connection name) and then click on the CONNECTION tab (right hand figure above), and enter the following details:
   a. Host name/address: developer.cege.ucl.ac.uk
   b. Port: 33029
   c. Maintenance database: userXXdb (where XX is your user number – e.g. user5db, user27db)
   d. Username: userxx (where xx is your user number e.g. user5, user23)
   e. Password: userxxpassword (where xx is your user number e.g: user5password, user72password)
   f. Save password: check this box

3. Click SAVE

4. Double-click on the connection you have just created

5. You will now see a list of databases, table spaces (which link to the files on disk that make up the database), group roles and login roles (a role is how you set privileges on the database – in other words, what data a user can see, can edit and whether the user can create new tables or not)

6. Double click on the *Databases* list, and you will get the following screen, which should show a list of databases. We will be using the *userXXdb* database, where XX refers to your user number.

7. Double click on your database (userXXdb) and then navigate down through the options as follows:

    userXXdb > Schemas > public > Tables

    This will give you a list of any tables that are currently stored in the *public* schema in the database.

8. Double-click on each of the tables to explore their structure. PostgreSQL gives you a description of each of the columns (fields) in the table, and you can also see any constraints that have been added (such as primary keys and foreign keys). (Your screen may show schemas and tables that are different to the one shown below)
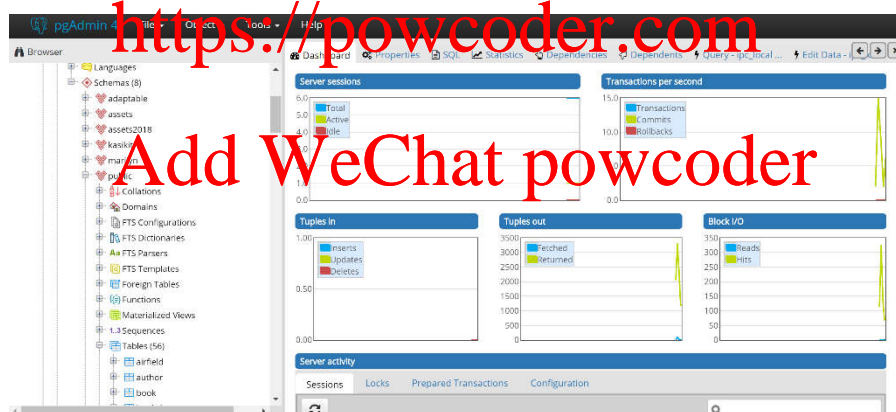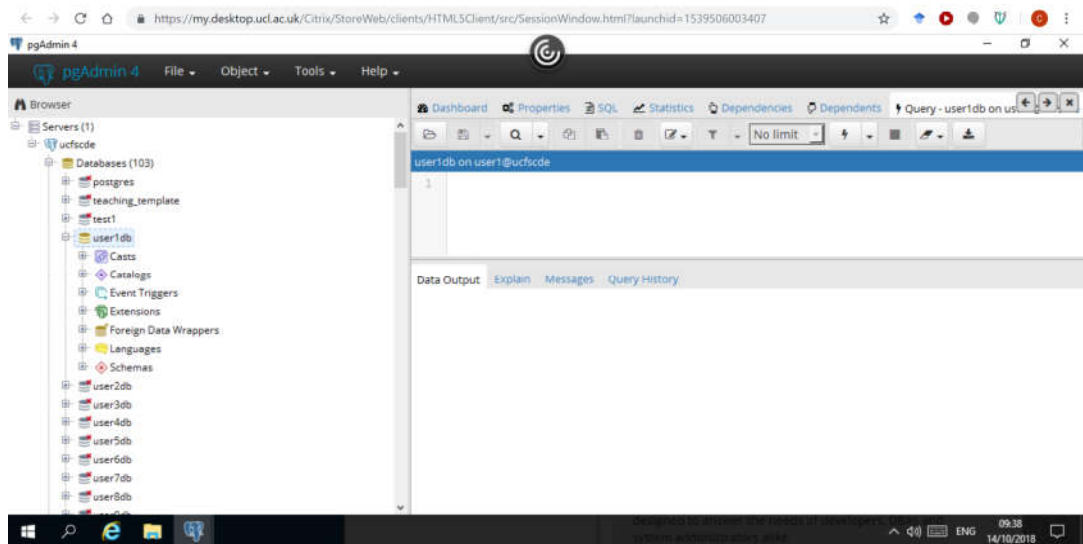
Changing Your Password

In order to ensure that people don't connect to your database by mistake you should change your database password. (NB: You only need to do this ONCE – you can then use your new password for the remainder of the module.)

Make sure you make a note of your password as you will need it every week and I am not able to change passwords very easily

1. Click on TOOLS > QUERY TOOL

2. In the top right hand box, type the following SQL (adapt for your user details and your own password)

ALTER USER user1 PASSWORD 'newpassword';

3. Run the SQL query by pressing F5

4. Once you have changed your password, fill in the survey here:
   https://moodle-1819.ucl.ac.uk/mod/feedback/view.php?id=812205

(NB: your password will not be shared with other students but I will use it to check your progress through the module)

5. The next time you log in you will need to use your new password