



**COMP9120 Database Management Systems**

## Tutorial Week 2

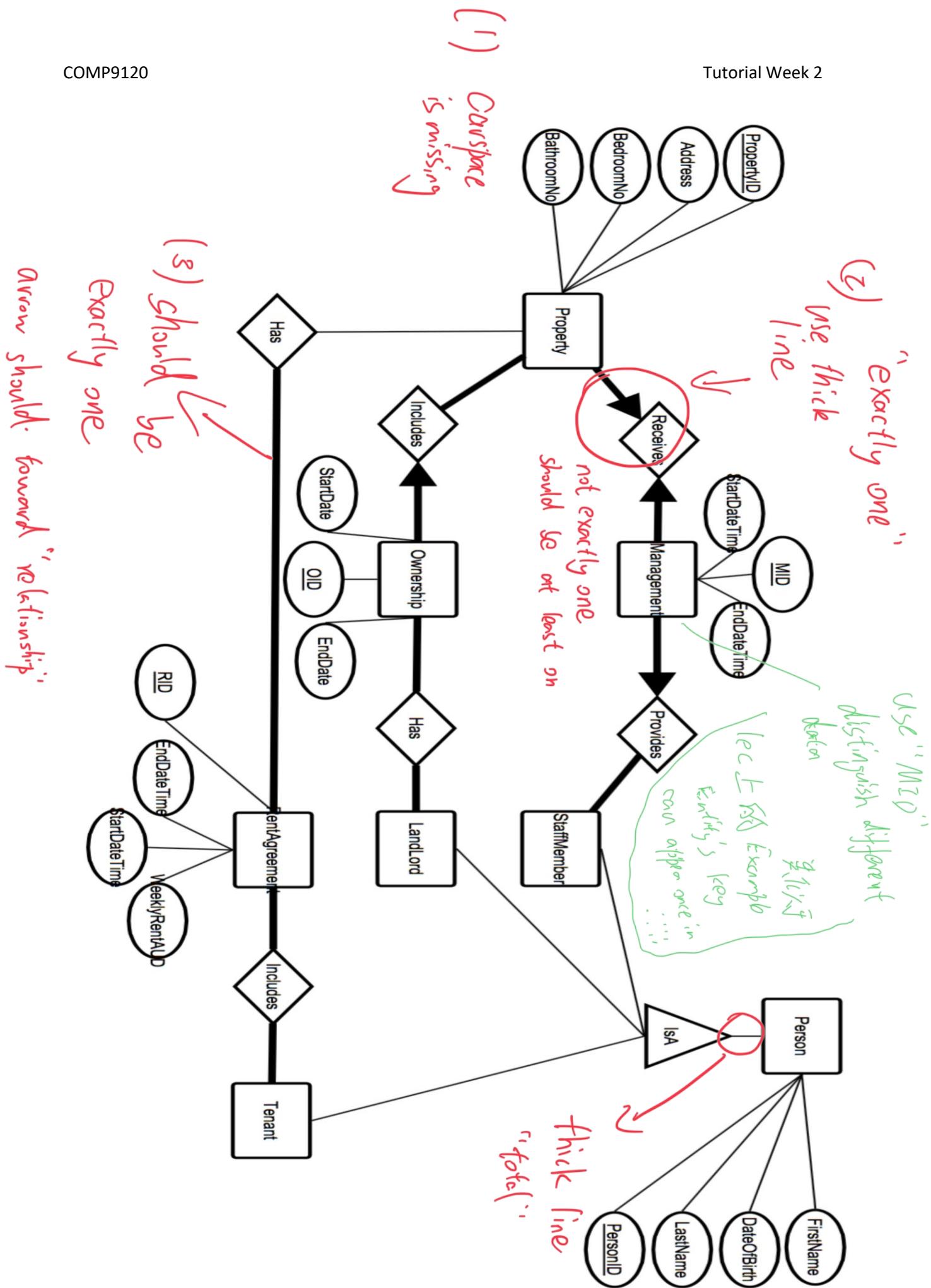
### Conceptual Design with Entity-Relationship Diagrams

#### Exercise 1. ER Diagram Analysis

Consider a real-estate company, which manages rental properties. Each property has an address, several bedrooms, bathrooms, and car spaces. A rental property may have several rental agreements. A rental agreement details the weekly rent that is agreed upon with one or more tenants for a property for a given period. For each of these tenants, the details that need to be recorded include first name, last name, and date of birth. At any point in time, each staff member must be responsible for managing at least one property, where a property can be managed by multiple staff members and must be managed by at least one staff member at any point in time. Staff members also have a first name, last name, and date of birth. At any point in time a property is owned by one or more landlords. The ownership of each property may also change over time.

The E-R diagram shown below is one attempt at modelling this domain. Consider what errors you can identify in this model.

thin line meaning?  
no constraints



Similar to A

## Exercise 2. ER Diagram Creation

This question asks you to develop an ER diagram from the narrative below.

The information system, which you will analyse, aims to assist a student recreational skiing society, which needs to deal with members and to organise events for members. At present the system is paper-based, but in future it is hoped to develop a computer-based system.

The society secretary uses the system to record information when a new member joins the society: the information includes the member's name, term-time address, vacation address, phone number, email, and the different varieties of skiing in which they are interested (for example, Peter Williams may have interest in the beginner's cross-country, the intermediate downhill, and the expert bobsled). Usually, members join for a period of one winter season by paying a fee, and at the end of that time the secretary can extend their membership if they pay another fee; alternatively, some members choose to join for longer periods (the fee they paid is then reduced, compared to paying for seasons one by one). The event manager uses the system to arrange a ski trip, which occurs over a particular period (such as the long weekend of October 4 to October 6 inclusive), includes accommodation at a particular address, and also has one or more sessions of various varieties of skiing, each located on a particular area of a ski slope; for example, one meeting may involve three sessions of intermediate downhill held on Piste X, Piste Y and Piste Z respectively, and one session of beginner's downhill held on Piste X. The event manager schedules each session with the appropriate number of participants from among the members who are interested in that variety of skiing. The cost of a meeting for the society depends on the number of members who are involved (as the accommodation fee is charged per person) as well as on the number of sessions, and the variety of each (because each different session requires booking an appropriate area of the ski slope). The club treasurer uses the system to obtain reports on the total cost of the trips held during each season, and on the total fee income from memberships for that season.

①

method 1

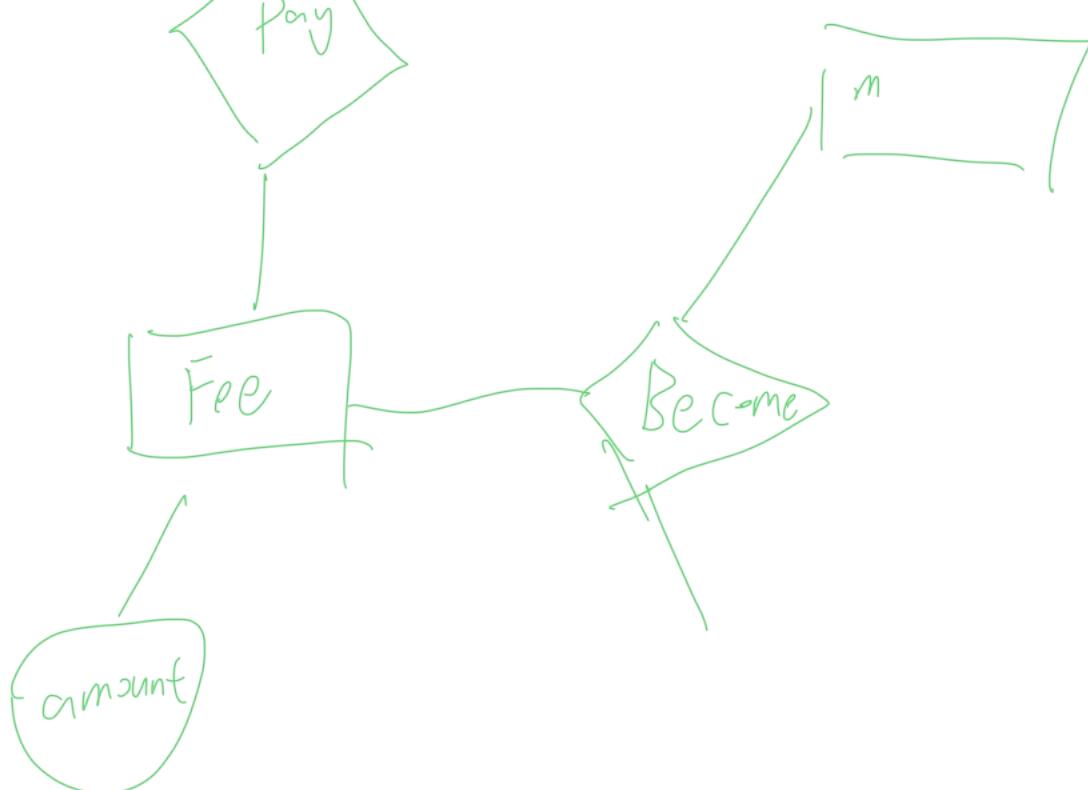
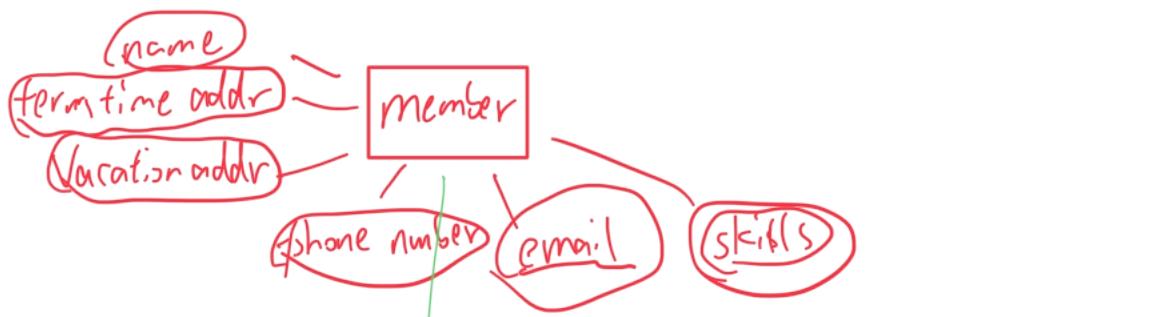
method 2

## Accessing remote PostgreSQL Account

You can remotely access the PostgreSQL server that is maintained by School of CS via pgAdmin. Note that, you will need to first connect securely to the university network using VPN – refer to the following link:

[https://sydneyuni.service-now.com/sm?id=kb\\_article\\_view&sys\\_kb\\_id=c0bf9bd6db41b3485beaf9b7f49619a2&sysparm\\_tsqueryId=f90a62cbdb937f44c8a5773c349619f2&sysparm\\_rank=7](https://sydneyuni.service-now.com/sm?id=kb_article_view&sys_kb_id=c0bf9bd6db41b3485beaf9b7f49619a2&sysparm_tsqueryId=f90a62cbdb937f44c8a5773c349619f2&sysparm_rank=7)

Your connection information has been sent to you via email.

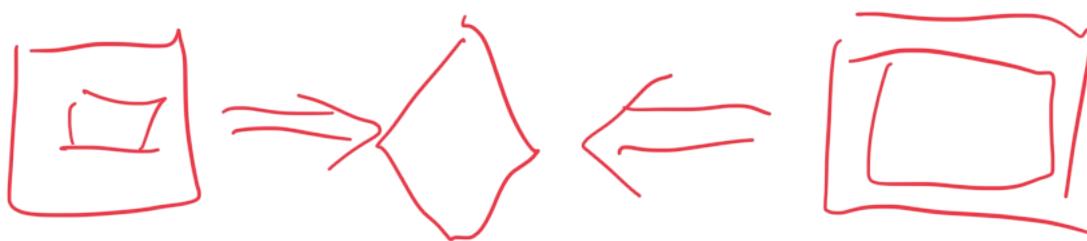
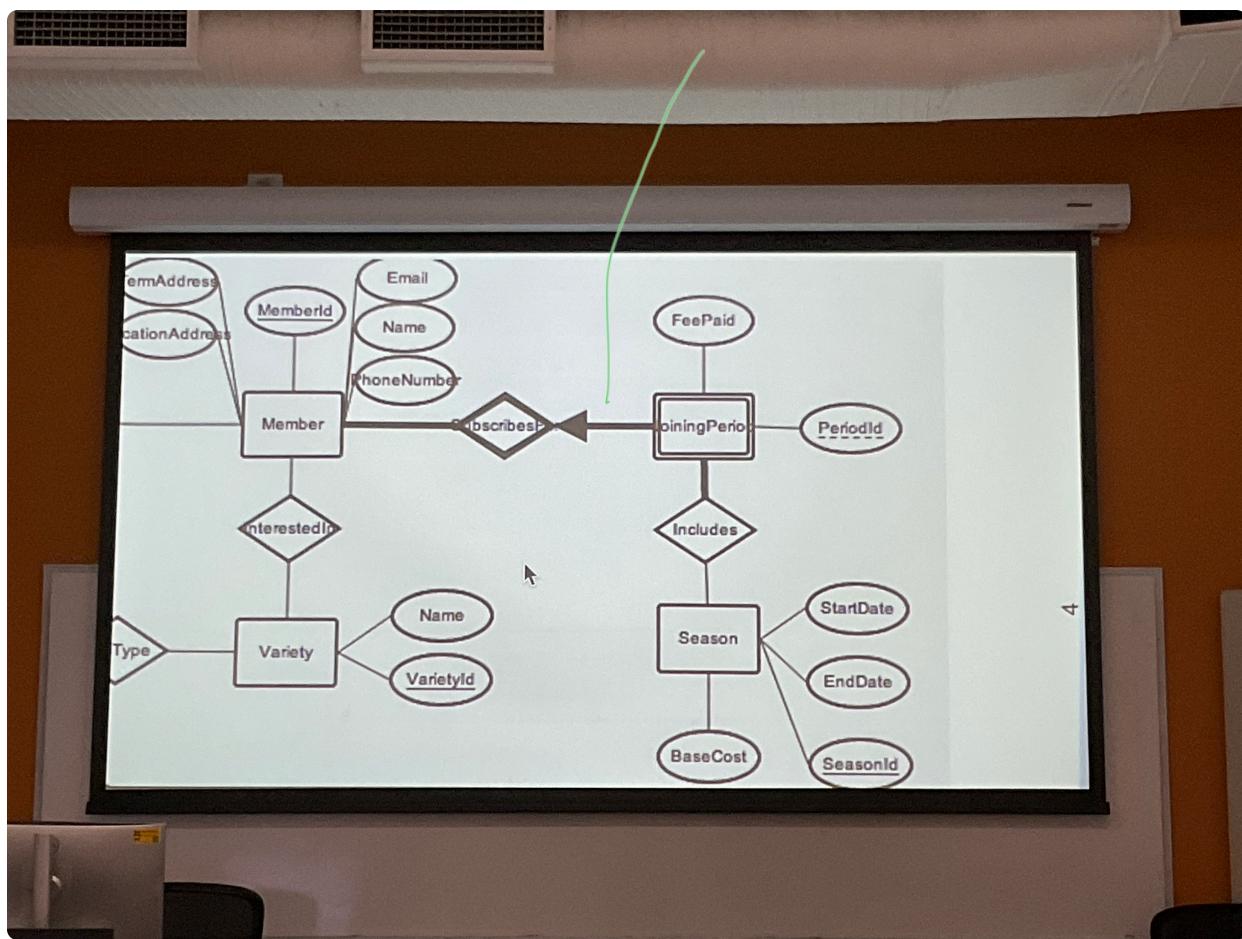


weak Entity can depend on another  
weak Entity.

weakly have only one  
weak relationship for Entity

official ans

- Every weak entity have to use thick arrow

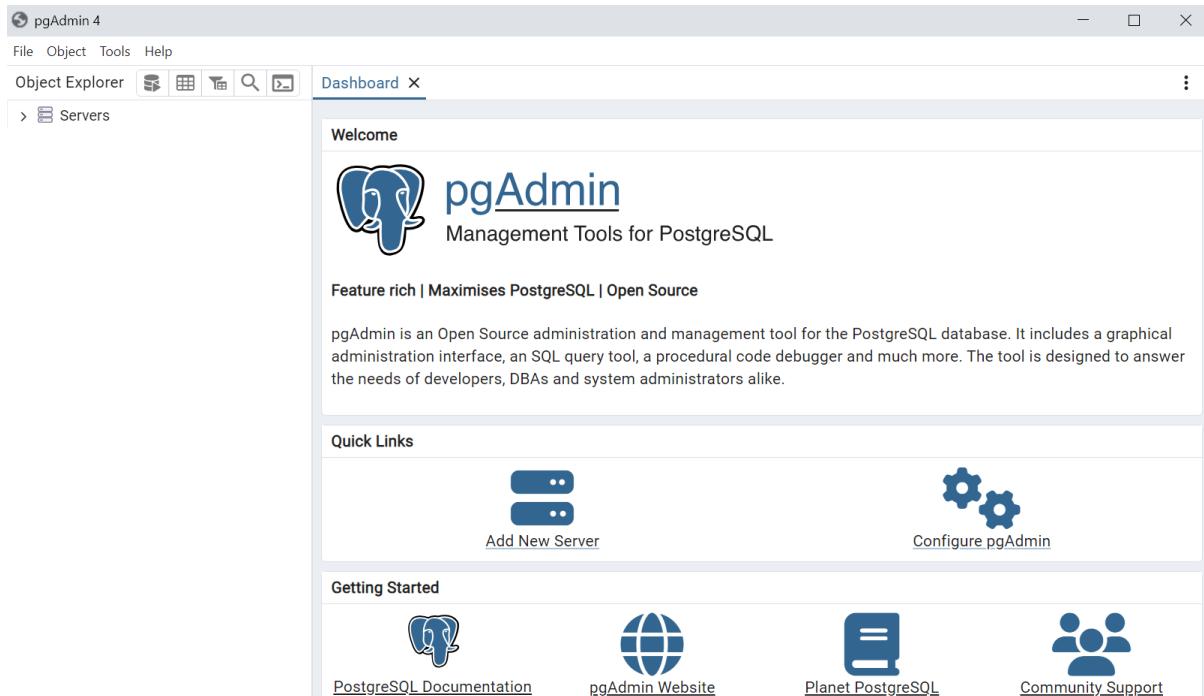


PK changes to  
a combination of keys

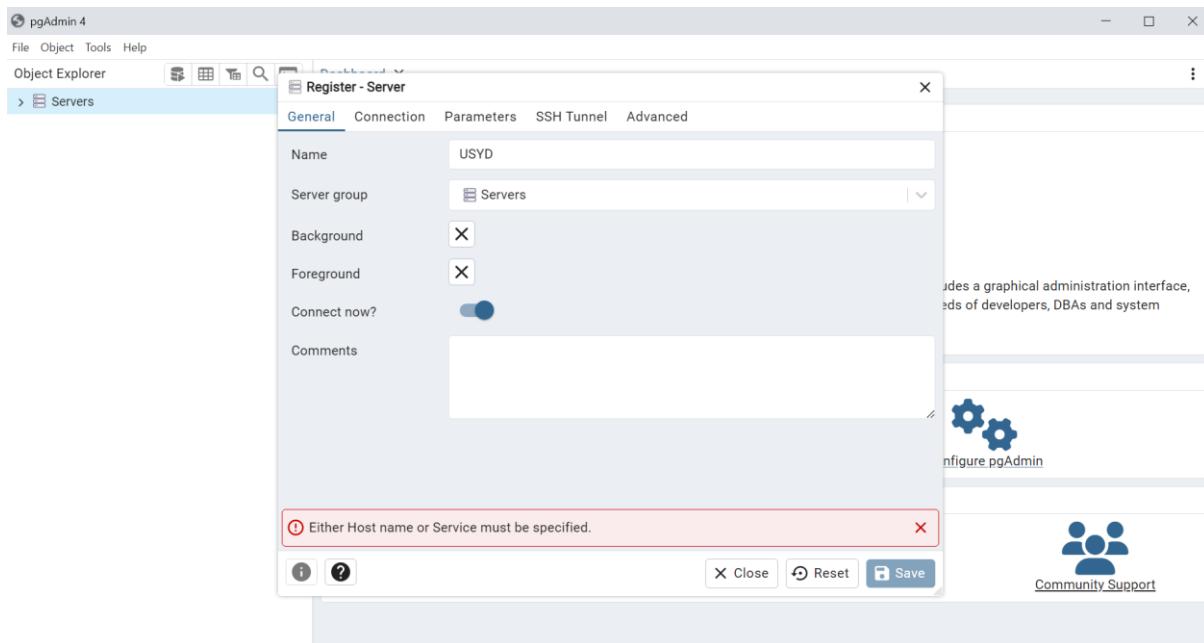
Such as

(memberId, PeriodId, SeasonId)

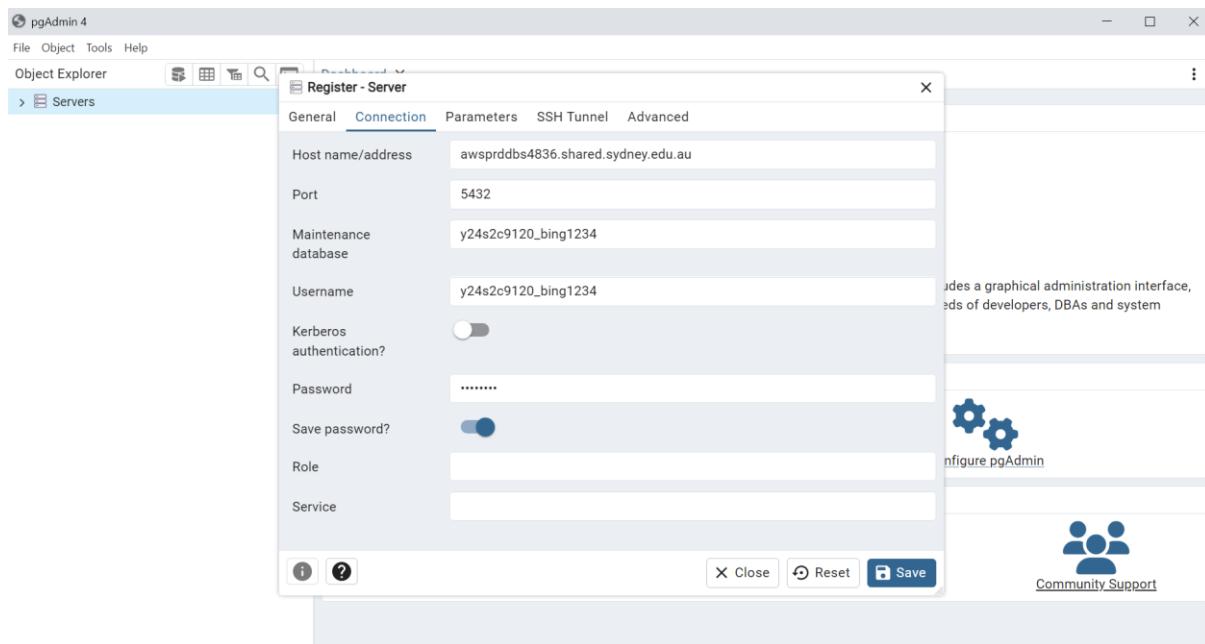
1. Start pgAdmin 4. You should see a screen like the one shown in the next picture. Type in any password if it asks you to set the master password for pgAdmin and click OK.



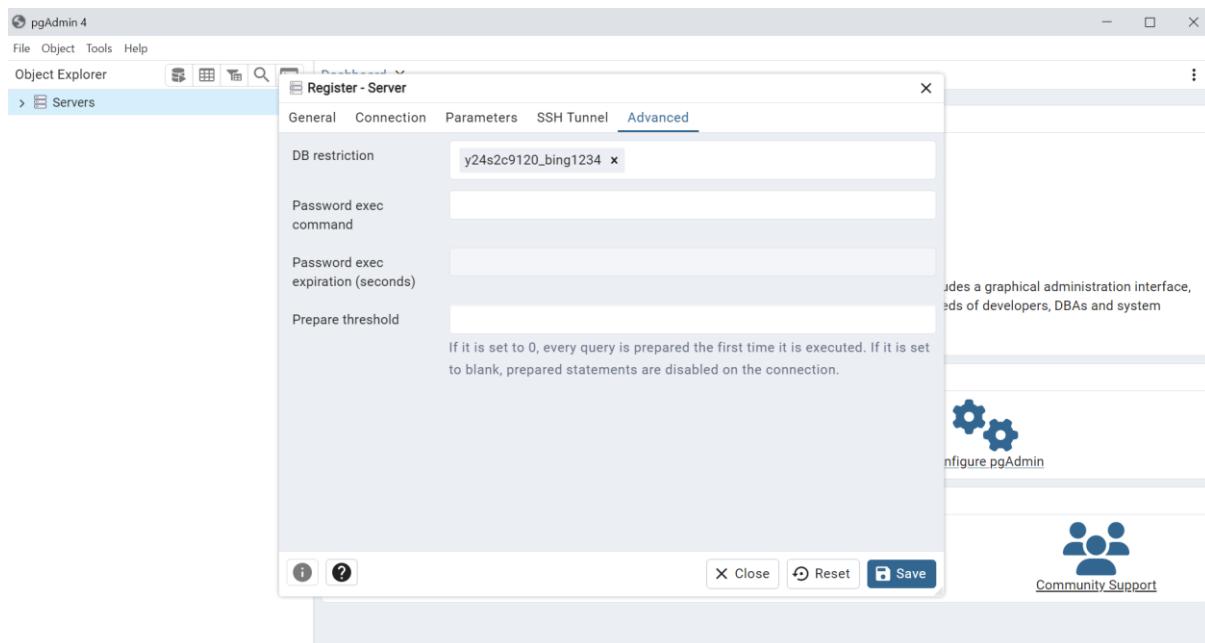
2. Right-click “Servers -> Register -> Server”. You should see the following window pop up. Type in the Name (this can be anything you like, e.g. USYD)



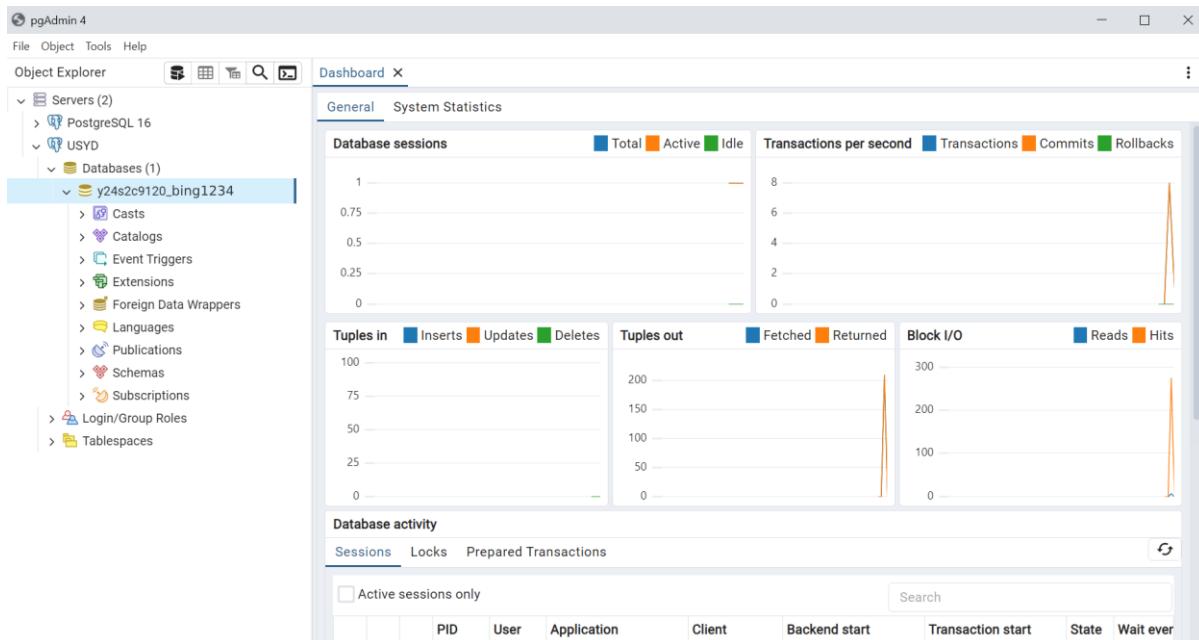
3. Click the tab “Connection”. Type in the Host name/address, Maintenance database, Username, Password, as per your DB connection details.



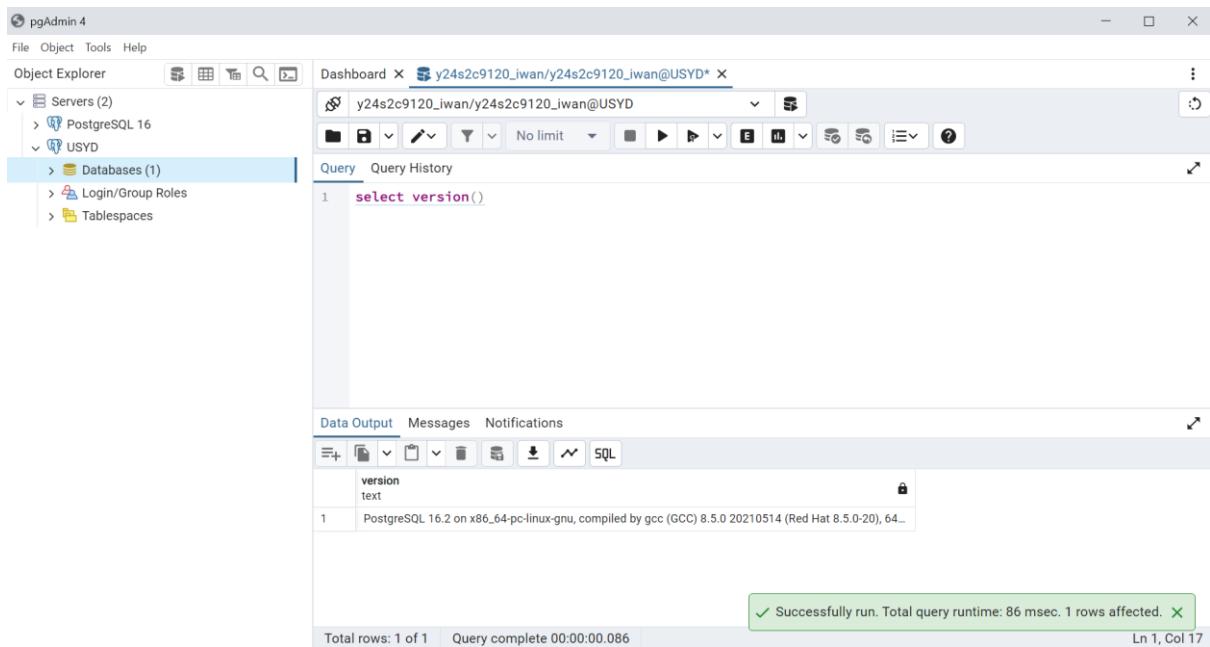
- Click the tab “Advanced”. Type in the same database name from the step above on the DB restriction field. This will restrict viewing / accessing the specified database only.



- Click “Save”. You should see the following screen:



6. Select your Database, and right-click your Database -> “Query Tool”. You should see the following screen that allows you to write and execute SQL commands.



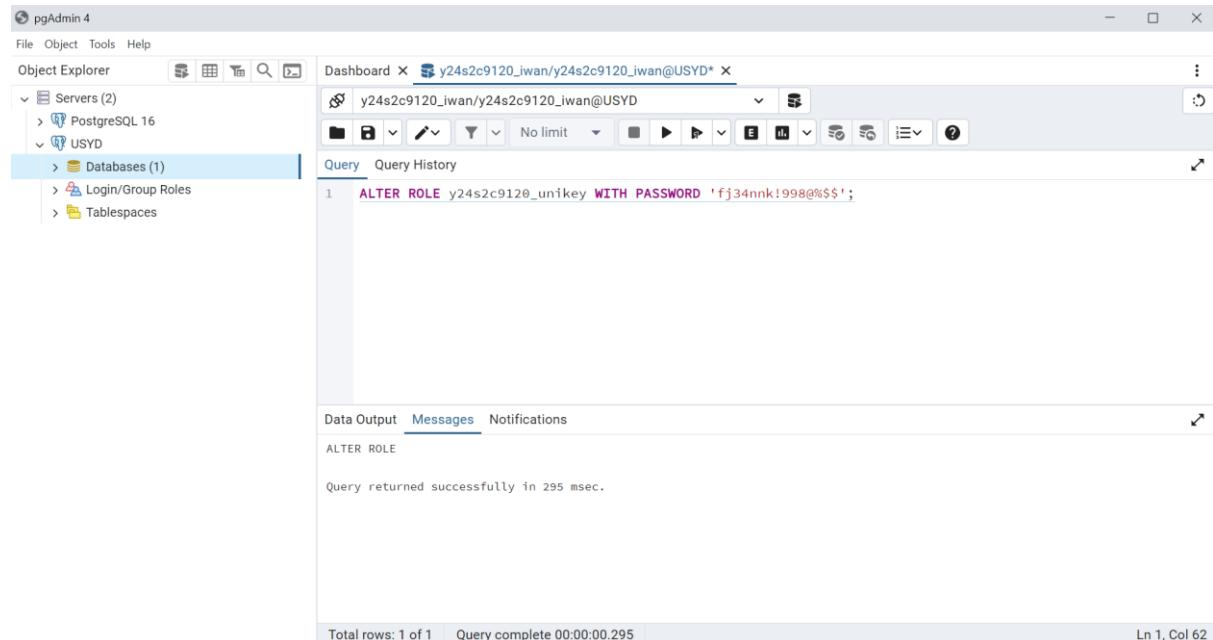
7. Change your password by executing the following SQL command:

```
ALTER ROLE y24s2c9120_unikey WITH PASSWORD 'a new secure password';
```

Replace ‘a new secure password’ with a new password that you wish to set for yourself. **Please remember your new password as you will need this in this course.**

Click “Execute script” or F5.

You should then see “Query returned successfully in \*\* msec.” displayed on the Messages tab in the Output panel, meaning that your password was changed successfully!



The screenshot shows the pgAdmin 4 interface. In the Object Explorer, under 'Servers (2)', 'PostgreSQL 16' is selected. Under 'PostgreSQL 16', 'USYD' is expanded, showing 'Databases (1)', 'Login/Group Roles', and 'Tablespaces'. A connection to 'y24s2c9120\_iwan/y24s2c9120\_iwan@USYD' is active. In the main pane, a query window contains the command:

```
1 ALTER ROLE y24s2c9120_unikey WITH PASSWORD 'fj34nnk!998@%$';
```

Below the query window, the 'Messages' tab of the Output panel is selected, displaying the message:

ALTER ROLE  
Query returned successfully in 295 msec.

At the bottom of the pgAdmin window, status bars show 'Total rows: 1 of 1', 'Query complete 00:00:00.295', and 'Ln 1, Col 62'.