Week 4 Tutorial
SQL Data Retrieval Part I

The following exercises will allow you to be familiar with writing basic SQL statements. Two main concepts that you need to learn from these exercises are:
- Using the WHERE clause to retrieve selected rows from a single table.
- Using the WHERE clause to join two or more tables.

Use the UNIVERSITY database to complete the exercises. Figure 1 depicts the data model for the UNIVERSITY database.
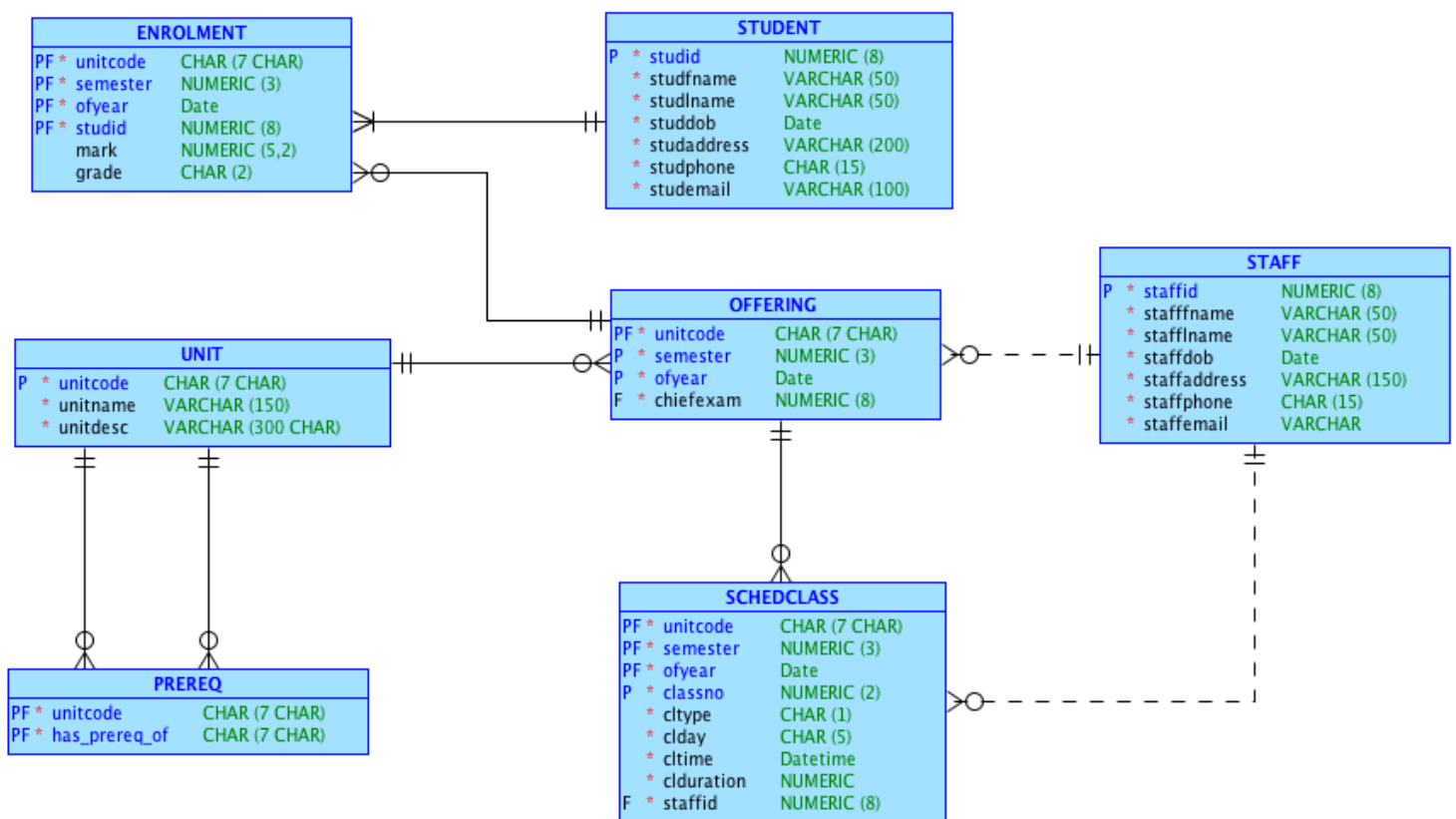
Figure 1 University data model

For students connecting to Monash Oracle database to complete these exercises, you do not need to run the supplied DDL scripts in your account. A UNIVERSITY database has been created under the user "UNI". To use the database you need to include the prefix "UNI" to the table names that you use in an SQL statement. For example, if you want to retrieve data from UNIT table you need to write:

```
SELECT unitcode, unitname
FROM uni.unit;
```

instead of

```
SELECT unitcode, unitname
FROM unit;
```

For students who are using a local installation of Oracle, the DDL schema and the SQL insert statements for the UNIVERSITY database are provided in the university.zip file available from Moodle.

This week we make use of Oracle dates – to use these correctly you should note the following:

- The Oracle date data type contains both date and time, however you can choose to use just a date, just a time, both or parts of a date depending on the format strings used
- TO_DATE: converts from a string to a date according to a format string
- TO_CHAR: converts from a date to a string according to a format string

The Oracle documentation links are:
- Format models: http://goo.gl/6IFTqP
- TO_DATE: http://goo.gl/hhrCAo
- TO_CHAR: http://goo.gl/7yvmwp

Part A. Retrieving data from a single table

1. List all students and their details.
2. List all units and their details.
3. List all students who have the surname 'Smith'.
4. List the student's details for those students who have surname starting with the letter "S". In the display, rename the columns studfname and studlname to firstname and lastname.
5. List the student's surname, firstname and address for those students who have surname starting with the letter "S" and firstname containing the letter "i".
6. List the unit code and semester of all units that are offered in the year 2014. To complete this question you need to use the Oracle function TO_CHAR() to convert the data type for the year component of the offering date into text. For example, `TO_CHAR(ofyear,'YYYY')` – here we are only using the year part of the date.
7. List the unit code of all units that are offered in semester 1 of 2014.
8. Assuming that a unit code is created based on the following rules:
   a. The first three letters represent faculty abbreviation, eg FIT for the Faculty of Information Technology.
   b. The first digit of the number following the letter represents the year level.
   List the unit details of all first year units in the Faculty of Information Technology.
9. List the unit code and semester of all units that were offered in either semester 1 or summer of 2013. Note: summer semester is recorded as semester 3.

10. List the student number, mark, unit code and semester for those students who passed any unit in semester 1 of 2013.

Part B. Retrieving data from multiple tables.

Note: remember to use the foreign key and the primary key when joining two or more tables.

1. List the name of all the students who have marks in the range of 60 to 70.
2. List all the unit codes, semester and name of the chief examiner for all the units that are offered in 2014.
3. List the name (firstname and surname), unit names, the year and semester of enrolment of all units taken so far.
4. List all the unit codes and the unit names and their year and semester offerings. To display the date correctly in Oracle, you need to use TO_CHAR() function. For example, `TO_CHAR(ofyear,'YYYY')`.
5. List the unit code, semester, class type (lecture or tutorial), day and time for all units taught by Albus Dumbledore in 2013. Sort the list according to the unit code.
6. Create a study statement for Mary Smith. A study statement contains unit code, unit name, semester and year study was attempted, the mark and grade.
7. Create a tutorial list for all units in semester 1, 2013. The list should include the unit code, unit name, class type, class no, student's firstname and student's surname. The list should be sorted according to unit codes, and within the unit code, the list will be further sorted byclass no.
8. List the unit code, unit name and the unit code and unit name of the pre-requisite units of all units in the database.
9. List the unit code and unit name of the pre-requisite units of 'Advanced Data Management' unit.
10. Find all students (list their id, firstname and surname) who have a failed unit in the year 2013.
11. List the student name, unit code, semester and year for those students who do not have any marks recorded.