Assignment 2

SQL Statements – INDIVIDUAL PROJECT (10%)

The Case

You have created a startup company to rent housing to university students.

Three kinds of property are rented: houses, apartments, and shared accommodation. About each property we record its address and the advertised weekly rent. About houses and apartments, but not shared accommodation, we record the number of bedrooms. About apartments, we also record the number of car spaces. About shared accommodation, we record the name and phone number of a contact person living at the property (the contact person is typically not one of our tenants).

We store the name and phone number of each tenant. We rent each property to one tenant. (If a group of students rent a property, we only deal with one of them.)

At any given time, an individual property is occupied by one tenancy, though over time there will be several, and over time an individual tenant may rent several properties.

When a tenant begins a new tenancy at a property, we record the date the tenant moved in, and the rent they will be charged. When the tenancy is over and the tenant moves out of the property, we record the date they left. Note that the rent charged for a particular tenancy, especially one in the past, may be different to the current advertised rent on that property.

To manage customer relationships, we keep track of every contact we have with tenants, recording who we interacted with, the time, the means by which contact was made (which can be by phone, email, or face-to-face, but might include other media in future), and some notes describing the conversation.

Your Task

The database has already been designed using MySQL; the data model is shown below and you can download a setup script to create the database on your server. Your job is to write SQL queries that analyse the data. Below you will find the specifications for the scripts you must write.

Setup Script

To help you write your SQL you are provided with a test version of the database. To set up the database in your MySQL server, download the file *Assignment2Setup.sql* from LMS and run it in Workbench. This script creates the schema and database tables and populates them with data. (Note the comments at the start of the script – there are different versions depending on whether you run it on the UniMelb server or your own.)
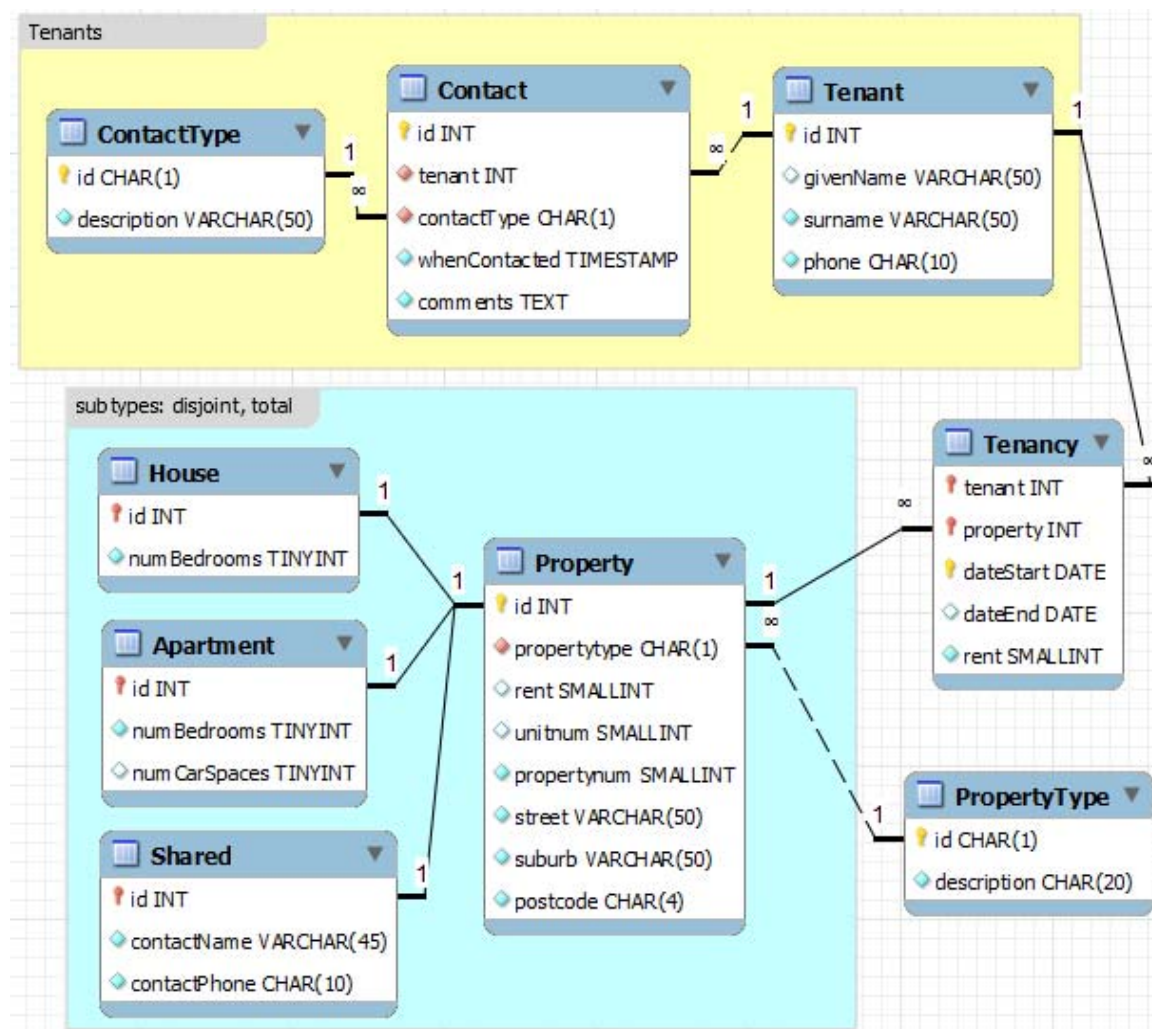
Submission

Submit your assignment *as a single PDF* to the Assessment page on LMS by midnight on the due date of Monday 2nd May.

Ensure that you place your username and student number at the top of every page of your submission. Other formatting requirements are listed below.

Data model

The following ER diagram describes the database schema which has been implemented.

Data source

The property addresses are drawn from the Australian Government's *Geocoded National Address File*, available at http://www.data.gov.au/dataset/geocoded-national-address-file-g-naf .

The SQL queries required

In this section are listed several questions for you to answer. Write **one** SQL statement per question. Do *not* use *views* to answer the questions. Where it would improve the readability of your output, order it and use aliases. Format large numbers and money amounts appropriately.

Beside each question is a maximum mark which reflects the difficulty of that question. The total will be scaled to 10% of your marks in the subject.

Your work will be assessed on the correctness and simplicity of the SQL that you write. (A query that produces correct output but is more complex than it needs to be, for example joining more tables than is necessary, may not achieve full marks, even though it produces the correct results.)

1. POPULAR TENANT NAMES   (1 mark)

List the ten most common tenant surnames and how many have each name.

2. UNPOPULAR PROPERTIES   (1 mark)

How many properties have never been rented, and what is their average rent?

3. WHERE DOES THE CALLER LIVE?   (2 marks)

The tenant "Deidra Kingsley" just phoned the office. Find the address of their current tenancy (not a tenancy that has already ended).

4. WHO WAS IN SHARED ACCOMMODATION?   (2 marks)

List out all the tenants who were renting shared accommodation
on the 1st of January, 2015.

5. DIFFERENT PROPERTY TYPES   (1 mark)

For each property type show the number of properties and the average advertised rent for that type.

6. OUR INCOME   (3 marks)

List all the tenancies which have completed. For each tenancy, show the total rent paid over the period of the tenancy.

7. INCOME PER POSTCODE   (3 marks)

Show the total income from completed tenancies for each postcode. Your answer should look like a table with two columns and one row per postcode.

8. WHERE ARE OUR CURRENT TENANTS?   (2 marks)

In which streets do most of our current tenants live?
List the top ten streets and the number of current tenancies in each.

9. DOES RENT CORRELATE WITH ROOMS?   (4 marks)

Print a table grouping all houses and apartments by number-of-rooms, showing the average advertised rent for each number.

10. WHEN DO TENANTS CONTACT US?   (2 marks)

On which day of the week (Monday, Tuesday etc.) are most contacts from tenants received? Show how many contacts have been received on that day.

11. REPEAT CUSTOMERS   (3 marks)

Which of our tenants have taken out more than one tenancy, and are also current tenants? List their given and surnames and the number of tenancies each has had.

12. HOW TENANTS TALK ABOUT RENT   (3 marks)

Print a list (one column without duplicates) of the different ways tenants used to contact us about rent (i.e. the comments include the word "rent").

13. CONTACTS CONCERNING CATS   (3 marks)

What percentage of our contacts with tenants include the word 'cat'?

14. WHERE DO CAT LOVERS LIVE?   (4 marks)

Those tenants who have called about cats - do they currently live in houses, apartments or shared accommodation? Print a table showing the number of cat-related contacts from each of these three types of accommodation.

(In questions 12-14 it is enough to search for the strings 'rent' and 'cat'.
But take a look at the data and your results and think about how this could be improved.)

15. MANY WAYS TO CONTACT US   (6 marks)

List the tenants who have contacted us in all the different ways there are to make contact. Show their id, given name and surname.

Formatting requirements for your submission

Submit a single PDF showing your answers to all questions.

For each question, present an answer in the following format:

- Show the question number and question in black text.
- Show your answer (the SQL statement) in blue text **(not a screen shot)**
- Show a screenshot from Workbench showing output of 10 or fewer lines.
- Show how many rows were returned, in red text

For example:

7. List all users with the last name 'Altman'

select * from User

where LastName = 'Altman';

Id	FirstName	LastName
1376	Robert	Altman
2880	Mark	Altman
10308	Robert	Altman
21472	Harry	Altman
21722	Robert	Altman

5 Rows Returned

SQL queries must be formatted in an easy-to-read manner. This means placing most clauses on new lines, and indenting subqueries. For example, this is acceptable:

```
SELECT DISTINCT ItemID FROM Sale
WHERE DepartmentID IN
        (SELECT DepartmentID FROM Department
        WHERE Department.DepartmentID = Sale.DepartmentID
        AND DepartmentFloor = 2);
```

whereas this is not acceptable:

```
SELECT DISTINCT ItemID FROM Sale WHERE DepartmentID IN (SELECT DepartmentID FROM Department WHERE Department.DepartmentID = Sale.DepartmentID AND DepartmentFloor = 2);
```

Please ensure that you place your username and student number at the top of every page of your submission.

Academic Honesty

This assignment must be your own work. Plagiarism - the copying of another's work without proper acknowledgment - is not permitted. Nor is allowing another person to copy your work. Work submitted for assessment purposes must be the independent work of the student concerned. Please refer to http://academichonesty.unimelb.edu.au/ for details about academic honesty.

Academic misconduct occurs when students portray someone else's work as their own. There are many ways in which academic misconduct can occur. Some of these are:

- **Sham Paraphrasing**: Material copied verbatim from text and source acknowledged in-line but represented as paraphrased.
- **Illicit Paraphrasing**: Material paraphrased from text without in-line acknowledgement of source.
- **Other Plagiarism**: Material copied from another student's assignment with the knowledge of the other student.
- **Verbatim Copying**: Material copied verbatim from text without in-line acknowledgement of the source.
- **Recycling**: Same assignment submitted more than once for different subjects.
- **Ghost Writing**: Assignment written by third party and represented as own work.
- **Purloining**: Assignment copied from another student's assignment or other person's papers without that persons knowledge.

The University is committed to graduating students with "a profound respect for truth, and for the ethics of scholarship... we want our graduates to be capable of independent thought, to be able to do their own work, and to know how to acknowledge the work of others" (Professor Peter McPhee). As such, the university takes a dim view of students who are not able to correctly acknowledge the work of others, or who try to pass this work off as their own. All students should be aware of the following web site: http://academichonesty.unimelb.edu.au/advice.html which provides practical advice to students about how not to be involved in academic misconduct. In particular look at the Quick Checklist section (paraphrased below).

Quick checklist (Reproduced with permission of Dr Stephen Morgan, Faculty of Economics and Commerce)

1. To be certain to acknowledge sources fairly and avoid plagiarising, review this checklist before beginning to write your essay and again after you have completed your first draft.
2. What type of source are you using: your own independent material, common knowledge, or someone else's independent material?
3. If you are quoting someone else's material, is the quotation exact? Have you used quotation marks for quotations run into the text? Have you set off block quotes with an extra space before and after the quote, single spacing within the quote, and left indenting of all lines of the block quote? Are omissions shown with ellipses and additions with square brackets?
4. If you are paraphrasing someone else's material, have you rewritten it in your own words and sentence structures? Does your paraphrase employ quotation marks when you resort to the author's exact language? Have you represented the author's meaning without distortion?
5. Have you acknowledged each use of someone else's material?
6. Do all references contain complete and accurate information on the sources you have cited?