School of Computing and Information Technology
University of Wollongong

Session: **Spring 2018**
Lecturer: **Tianbing Xia**

CSIT115/CSIT815 Data Management and Security
Assignment 2

Scope

This assignment is related to application of data definition and data manipulation statements of SQL.

Important messages

Please read the messages listed below before implementation of the tasks included in a specification of Assignment 2.

More implementation related information can be found in "How to … ?" Cookbook available through Moodle or at:
`http://www.uow.edu.au/~jrg/115/COOKBOOK`.

The outcomes of Assignment 2 are due by **Monday, 24 September, 2018, 11.55 pm (sharp).**

Assignment 2 contributes to 8% of the total evaluation in the subject. 3 tasks are included in this assignment.

A submission procedure is explained at the end of this document.

Only one submission of the outcomes of Assignment 2 is allowed and only one submission per student is accepted. Please make sure that you submit the correct files.

A submission that contains an incorrect file attached is treated as a correct submission with all consequences coming from the evaluation of the file attached.

Compressed (zipped, rared, tared, etc) files will not be evaluated.

All files left on Moodle in a state "`Draft(not submitted)`" will not be evaluated.

A submission marked by Moodle as "late" is treated as a late submission no matter how many seconds it is late.

A policy regarding late submissions is included in CSIT115/815 Subject Outline.

Prologue

Download the files `dbcreate.sql`, `dbdrop.sql`, `dbload.sql`, template files `solution1.sql`, `solution2.sql` and `solution3.sql`, and `dbschema.pdf`. Copy the files to your USB drive or email the files to yourself such that you can access all of them either through command line interface mysql or graphical user interface MySQL Workbench.

Connect to MySQL database server either through command line interface mysql or graphical user interface MySQL Workbench.

When connected, select a database `csit115` with a command

```
use csit115
```

It is strongly recommended to process SQL script file `dbdrop.sql` to drop all relational tables used for implementation of the previous assessment task.

To re-create the relational tables of a sample database, process SQL script `dbcreate.sql`.

To load data into the relational tables created in the previous step process SQL script `dbload.sql`.

To list the names of relational tables created, use a command `show tables`.

To list a structure of a relational table `<table-name>` use a command: `describe <table-name>`.

Use a pdf viewer to open a file `dbschema.pdf` with a conceptual schema of the sample database.

No report is expected from the implementation of the steps listed above.

Tasks
Task 1 (2 marks)

Your task is to use `INSERT` and/or `DELETE` and/or `UPDATE` statements of SQL to implement a script file `solution1.sql` that performs the following manipulations on the contents of the sample database listed below.

Your SQL statements must operate on the sample database loaded with data.

An important condition is that you must use `INSERT` and/or `DELETE` and/or `UPDATE` statements of SQL. No other statements of SQL are allowed. It means that you are not allowed to change any consistency constraints imposed on the contents of the data base like, for example suspension of foreign key constraints, etc.

Note, that implementation of the actions listed below may require more than one SQL statement. You may use nested SELECT statement for the implementations. You can only use the values and conditions that provided in the questions.

(1) Add a new department `SERVICES` into the database. The department number is `7`. The employee `00105` becomes a manager that works in the department SERVICES. His job started at `31/08/2018`.
The new department SERVICES located at `10 Church street, Wollongong, NSW 2500`.
The supervisor number of the employee `00105` is `00100`.
(0.4 marks)

(2) An employee `00110` starts to work in the department `ACCOUNTING` as a manager at `01/09/2018`. An employee `00120` starts to work in the department `SALES` as a manager at the same day.
Note: The employees supervised by their department managers should also be updated.
(0.8 marks)

(3) An employee `00200` decided to quit a job. The employee `00136` has been promoted to manage the department that the employee `00200` managed. Remove all information about the employee `00200` from the database. Update all information for a new manager `00136`.
(0.8 marks)

When ready execute SQL scrip `solution1.sql` and save a report from the processing of the script in a file `solution1.rpt`.

Start mysql command line in a terminal by

```
mysql -u csit115 -p  -v  -c
```

Then input a password `csit115`. `It` allows MySQL database server to display comments and SQL script for each question in a report.

Use the commands as follows to generate a report for Task 1.

```
tee solution1.rpt;
source solution1.sql;
notee;
```

Hint: You can find a lot of applications of database definitions and manipulation statements in the "COOKBOOK".

Deliverables

A file `solution1.rpt` with a report from processing of SQL script `solution1.sql`. The report MUST have no errors and the report MUST list all SQL statements processed.

A report that contains no listing of executed SQL statements scores no marks and report that contains errors also scores no marks!

Submission of a file with a different name and/or different extension and/or different type scores no marks.

Task 2 (3 marks)

Process SQL script file `dbdrop.sql` to drop all relational tables used for implementation of the previous task.

To re-create the relational tables of a sample database, process SQL script `dbcreate.sql`.

To load data into the relational tables created in the previous step process SQL script `dbload.sql`.

No report is expected from the implementation of the steps listed above.

Implement the queries as `SELECT` statements of SQL in a given template script file `solution2.sql` for the questions below. One statement for one question.

(1) Find the names of all the departments that located in `Wollongong`.

(2) Find the names of all the departments that located in at least `2` addresses.

(3) Find project number and title for the projects that allocated in a department `GAMES`.

(4) Find `employee number` and name for the employees who work on both projects `1002 and 1004`.

(5) Find `employee number` and `name` (in uppercase) for all employees who were born before 1985. Format the results in the descending order of their names.

(6) Find `employee number` and `name` (in uppercase) for all employees who work on 2 or more projects.

When ready execute SQL scrip `solution2.sql` and save a report from execution in a file `solution2.rpt`.

Start mysql command line in a terminal by

```
mysql -u csit115 -p  -v  -c
```

Then input a password `csit115`. `It` allows MySQL database server to display comments and SQL script for each question in a report.

Use the commands as follows to generate a report for Task 2.

```
tee solution2.rpt;
source solution2.sql;
```

```
notee;
```

Hint: You can find similar `SELECT` statement already implemented in the "Cookbook".

Deliverables
A file `solution2.rpt` with a report from processing of SQL script `solution2.sql`. The report MUST have no errors and the report MUST list all SQL statements processed.

A report that contains no listing of executed SQL statements scores no marks and report that contains errors also scores no marks !

Submission of a file with a different name and/or different extension and/or different type scores no marks.

Task 3 (3 marks)
Process SQL script file `dbdrop.sql` to drop all relational tables used for implementation of the previous task.

To re-create the relational tables of a sample database, process SQL script `dbcreate.sql`.

To load data into the relational tables created in the previous step process SQL script `dbload.sql`.

No report is expected from the implementation of the steps listed above.

Implement the queries as `SELECT` statements of SQL in a given template script file `solution3.sql` for the questions below. One statement for one question.

The queries listed below must be implemented as JOIN queries. You should consider LEFT / RIGHT OUTER JOIN for some questions.

(1) For each department, find the department name and total budgets of the projects allocated for the department.

(2) For each employee, find the name and total number of projects that the employee works on.

(3) Find the names of the all employees who work on the projects that the budgets are more than $100000.

(4) Find the number and names of all departments that only located in `NSW`.

The queries listed below must be implemented as nested queries with `EXISTS/NOT EXISTS` clauses.

(5) Find the number and name for the employees who have dependents.

(6) Find the number and name for the employees who have no project.

When ready execute SQL scrip `solution3.sql` and save a report from execution in a file `solution3.rpt`.

Start mysql command line in a terminal by

```
mysql -u csit115 -p  -v  -c
```

Then input a password `csit115. It` allows MySQL database server to display comments and SQL script for each question in a report.

Use the commands as follows to generate a report for Task 2.

```
tee solution3.rpt;
source solution3.sql;
notee;
```

Hint: You can find similar `SELECT` statement already implemented in the "Cookbook".

Deliverables
A file `solution3.rpt` with a report from processing of SQL script `solution3.sql`. The report MUST have no errors and the report MUST list all SQL statements processed.

A report that contains no listing of executed SQL statements scores no marks and report that contains errors also scores no marks !

Submission of a file with a different name and/or different extension and/or different type scores no marks.

Submission
Note, that you have only one submission. So, make it absolutely sure that you submit the correct files with the correct contents and correct types. No other submission is possible !

Submit the files **`solution1.rpt`**, **`solution2.rpt`**, and **`solution3.rpt`** through Moodle in the following way:

(1) Access Moodle at **`http://moodle.uowplatform.edu.au/`**
(2) To login use a **`Login`** link located in the right upper corner the Web page or in the middle of the bottom of the Web page
(3) When logged select a site **`CSIT115/DPIT115/CSIT815 (S218)Data Management and Security`**
(4) Scroll down to a section **`Submissions`**
(5) Click at a link **`In this place you can submit the outcomes of Assignment 2`**
(6) Click at a button **`Add Submission`**
(7) Move a file **`solution1.rpt`** into an area **`You can drag and drop files here to add them`**. You can also use a link **`Add…`**
(8) Repeat step (7) for the files **`solution2.rpt`** and **`solution3.rpt`**.
(9) Click at a button **`Save changes`**
(10) Click at a button **`Submit assignment`**
(11) Click at the checkbox with a text attached: **`By checking this box, I confirm that this submission is my own work, …`** in order to confirm the authorship of your submission
(12) Click at a button **`Continue`**

It is expected that all its tasks included within **Assignment 2** will be implemented **individually without any cooperation** with the other students. If you have any doubts, questions, etc. please consult your lecturer or tutor during lab classes or office hours. Plagiarism will result in a **FAIL** grade being recorded for that assessment task.

End of specification