School of Computing and Information Technology
University of Wollongong

Session: **Autumn 2019**
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CSIT115/CSIT815 Data Management and Security
Assignment 2

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Scope

This assignment is related to implementation of simple `SELECT` statements, `SELECT` statement with `GROUP BY` and `HAVING` clauses, `SELECT` statements that join and antijoin relational tables, nested `SELECT` statements with set membership operation, and nested `SELECT` statements with `EXISTS/NOT EXISTS` clauses.

Please read very carefully information listed below.

This assignment contributes to 8% of the total evaluation in a subject CSIT115 and it contributes to 8% of the total evaluation in a subject CSIT815.

The outcomes of the assignment work are due by **Saturday 11 May 2019, 7.00 pm (sharp).**

A submission procedure is explained at the end of specification.

This assignment consists of 3 tasks and specification of each task starts from a new page.

It is recommended to solve the problems before attending the laboratory classes in order to efficiently use supervised laboratory time.

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 the subject outline.

A submission of compressed files (zipped, gzipped, rared, tared, 7-zipped, lhzed, … etc) is not allowed. The compressed files will not be evaluated.

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

An implementation that does not compile due to one or more syntactical errors scores no marks and implementation that has the processing errors scores no marks.

It is expected that all tasks included within **Assignment 2** will be solved **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 the assessment task.

Prologue

Connect to Moodle and download the files `dbcreate.sql`, `dbdrop.sql`, `dbload.sql`, `dbcount.sql`, and `dbschema.pdf` from Sample database section on Moodle.

SQL script `dbcreate.sql` can be used to create the relational tables of a sample database. SQL script `dbdrop.sql` can be used to drop the tables of a sample database. SQL script `dbload.sql` can be used to load data into a sample database. SQL script `dbcount.sql` can be used to display the total number of rows in each table included in a sample database. Finally, a file `dbschema.pdf` contains a conceptual schema of a sample database.

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`.

To 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>`.

To list the total number of rows in each relational table process a script `dbcount.sql`.

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 actions listed above.

Tasks

Task 1 (2 marks)

Download a file `solution1.sql` and insert into the file the implementations of the following queries as `SELECT` statements of SQL.

(1) Find a name of product and name of supplier and unit price of all products where unit price is less than `10` and supplier name is `Norske Meierier`.

(2) Find a name of suppliers and unit price of all products where a unit price is in range between `9` and `10` both inclusive.

(3) Find a company name, contact name, fax number, and home page address of all suppliers that either do not have fax number or do not have home page.

(4) Find the first and last names of all employees born in `1992`. It is your task to find an appropriate standard function that can be used to extract a year from a date.

(5) Find the first names, last names, and cities of all employees. The results should be displayed in the ascending order of the cities and for all employees located in the same city in the descending order of the last name.

(6) Find the total number of distinct names of cities where at least one employee is located at.

(7) Find the total number of products that belong to each category. Order the results in the ascending order of the total number of products.

(8) Find the total number of products that belong to each category and list only the categories where the total number of products is greater than `10`. Order the results in the descending order of the total number of products.

(9) Find order id, shipped date, order date of all orders shipped within `2` days after order date.

(10) Find a name of product and unit price of all product whose name starts from `Sir` and has a character `'` (single quotation) within a name.

When ready process a script file `solution1.sql` with `SELECT` statements.

To create a report from processing of `SELECT` statements open a Terminal window and start the command line interface `mysql` in the following way:

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

Next, process SQL script `solution1.sql` and save a report in a file `solution1.rpt`. Note, that when started with the options **`-v`** and **`-c`** the command

line interface includes both listing of `SELECT` statements processed and the comments included in the original version of a file `solution1.sql`.

Deliverables

A file `solution1.rpt` with a report from processing of SQL script `solution1.sql`. The report must be created with the command line interface mysql, the report MUST NOT include any errors, and the report must list all SQL statements processed and all comments included in the original (downloaded) version of `solution1.sql`. Marks will be deducted for the missing comments. Submission of a file with a different name and/or different extension and/or different type scores no marks.

Task 2 (3 marks)
Download a file `solution2.sql` and insert into the file the implementations of the following queries as `SELECT` statements of SQL.

The queries listed below must be implemented as `SELECT` statements with `JOIN` operation.

(1) Find a code and company name of all customers who submitted at least one order in `April 1997`. It is your task to find an appropriate standard function that can be used to extract a month from a date.

(2) Find a name of product ordered and order date of all products ordered by a customer with customer code `SAVEA` and such that quantity of product is `10`.

(3) Find the total number of cities the customers who submitted at least one order in `1996` or in `1997` or in `1998` come from.

(4) Find a description of category such that at least one product from the category has unit price greater than `100`.

(5) Find the names of products that have not been ordered yet. A hint is to use `OUTER JOIN` operation.

(6) Find the first and last name of a direct manager of employee whose first name is `Nancy` and last name is `Davolio`.

When ready process a script file `solution2.sql` with `SELECT` statements.

To create a report from processing of `SELECT` statements open a Terminal window and start the command line interface `mysql` in the following way:

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

Next, process SQL script `solution2.sql` and save a report in a file `solution2.rpt`. Note, that when started with the options **`-v`** and **`-c`** the command line interface includes both listing of `SELECT` statements processed and the comments included in the original version of a file `solution2.sql`.

Deliverables
A file `solution2.rpt` with a report from processing of SQL script `solution2.sql`. The report must be created with the command line interface mysql, the report MUST NOT include any errors, and the report must list all SQL statements processed and all comments included in the original (downloaded) version of `solution2.sql`. Marks will be deducted for the missing comments. Submission of a

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

Task 3 (3 marks)
Download a file `solution3.sql` and insert into the file the implementations of the following queries as `SELECT` statements of SQL.

The queries listed below must be implemented as nested `SELECT` statements with `IN/NOT IN` set membership operation.

(1) Find a code and company name of all customers who submitted at least one order in `April 1997`.

(2) Find the total number of all customers who submitted no orders in `April 1997`.

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

(3) Find a code and company name of all customers who submitted at least one order in `April 1997`.

(4) Find the total number of all customers who submitted no orders in `April 1997`.

A query listed below must be implemented with set algebra operations.

(5) Find a code of all customers who ordered product `Tofu` or product `Tunnbrod`.

A query listed below must be implemented as a nested query.

(6) Find the first and last name of a direct manager of employee whose first name is `Nancy` and last name is `Davolio`.

When ready process a script file `solution3.sql` with `SELECT` statements.

To create a report from processing of `SELECT` statements open a Terminal window and start the command line interface `mysql` in the following way:

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

Next, process SQL script `solution3.sql` and save a report in a file `solution3.rpt`. Note, that when started with the options **`-v`** and **`-c`** the command line interface includes both listing of `SELECT` statements processed and the comments included in the original version of a file `solution3.sql`.

Deliverables
A file `solution3.rpt` with a report from processing of SQL script `solution3.sql`. The report must be created with the command line interface mysql, the report MUST NOT include any errors, and the report must list all SQL statements

processed and all comments included in the original (downloaded) version of `solution3.sql`. Marks will be deducted for the missing comments. 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/CSIT815 (S119)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`**

End of specification