CSIT115/CSIT815 Data Management and Security
Laboratory 5
Published on 6 May, 2019

Scope

This laboratory includes the tasks related to application of advanced DML statements, and SELECT statements with WITH clause.

The outcomes of the laboratory work are due by **Saturday 18 May 2019, 7.00 pm (sharp).**

Please read very carefully information listed below.

This laboratory contributes to 3% of the total evaluation in a subject CSIT115 and it contributes to 3% of the total evaluation in a subject CSIT815.

A submission procedure is explained at the end of specification.

A submission procedure is explained at the end of specification.

This assignment consists of 1 task and specification of the 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 **Laboratory 5** 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.

Important

If you plan to use MySQL Workbench for implementation of this task then just after starting MySQL Workbench navigate to:

`Edit -> Preferences` **…**

and then to:

`SQL Editor`

and scroll down to the bottom of Workarea Preferences window and turn off an option `Safe Updates.`

Then, quit MySQL Workbench and restart it again.

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`.

If you have already created the sample database for implementation of the previous coursework tasks then it is still recommended to drop the database with script `dbdrop.sql` and to re-create it one more time. 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 implementation of the actions listed above.

Tasks
Task 1 (3 marks)
Download a file `solution1.sql` and insert into the file the implementations of the following data definition, data manipulation, and query operations on the sample database. Note, that you have to use more than one SQL statement to implement the operations.

(1) Use a single SQL statement to create a relational table and to load into the table all information about the orders submitted in `1996` or in `1998` by the customers located in `Paris` or in `London` or in `Madrid`. Next, enforce the appropriate consistency constraints on the new table.

(2) Create a new relational table to store information about the company names of all suppliers and the total number of products supplied by each supplier. Enforce, the appropriate consistency constraints on the new table. Next, copy into the new table information about the company names of all suppliers and the total number of products supplied by each supplier.

(3) Add to a relational table `EMPLOYEE` information about the total number of orders handled by each employee. Note, that if an employee handled no orders then for such employee the total number of orders must be set to zero. Enforce the appropriate consistency constraints on a relational table `EMPLOYEE`.

(4) Delete from the database information about all suppliers located in `USA`. Information about all products supplied by the suppliers located in `USA` must remain in the database. You are not allowed to drop and/or to suspend any referential integrity constraints and you must modify one of `NULL/NOT NULL` consistency constraints.

(5) Insert into a file `solution1.sql` implementation of the following query as `SELECT` statement with `WITH` clause.

Find all orders such that a value of each order is greater than an average value of all orders submitted so far. List in each line of output an order identifier, a total value of an order, and an average value of all orders. The results must be sorted in the descending order of a total value of each order.

A total value of an order must be computed as the summation of *unit price * quantity* over all items included in the order.

The query must be implemented as a sequence of subquery definitions following `WITH` keyword and ended with the final `SELECT`.

(i) The first subquery definition must find a total value of each order together with an order identifier (attribute `order_id`).

(ii) The second subquery definition must find an average value of all orders.

(iii) The third subquery definition must find all orders and their values such that value of each order is greater than an average value of all orders.

(iv) The final SELECT statement must extend the results of subquery definition (iii) with a column average_value that contains an average value of all orders and it must sort the results in descending order of a total value of each order.

To create a report from processing of a script file solution1.sql 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.

Submission

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

Submit a file **solution1.rpt** to 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 & Security**
(4) Scroll down to a section **Submissions**
(5) Click at a link **In this place you can submit the outcomes of Laboratory 5**
(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) Click at a button **Save changes**
(9) Click at a button **Submit assignment**
(10) 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
(11) Click at a button **Continue**

End of specification