School of Computing and Information Technology
University of Wollongong

Session: **Autumn 2018**
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CSIT115/CSIT815 Data Management and Security
Assignment 2
26 March 2018

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 **Saturday, 14 April, 2018, 10.00pm (sharp).**

Assignment 2 contributes to 6% (5% for CSIT815 students) of the total evaluation in the subject.

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.

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

The reports from processing of SQL scripts must return NO ERRORS ! A solution with the errors is worth no marks !

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

Prologue

Download the files `dbcreate.sql`, `dbdrop.sql`, `dbload.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`.

To create the relational tables of a sample database, process SQL script `dbcreate.sql`. A script `dbdrop.sql` can be used to drop the relational tables. Do not drop the relational tables now.

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. The green blobs represent the relational tables that implement the classes of objects and associations.

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

Tasks

Task 1 (2 marks)

Your task is to create and to process SQL script `solution1.sql` with only `ALTER TABLE` statements that implement the following modifications of the structures of relational tables included in the sample database. Of course, you do not need to modify the contents of the relational tables. Note, that some modifications may require more than one `ALTER TABLE` statement.

(1) We would like to be able to add information about the total number of applications submitted by each applicant. Assume that, an applicant cannot submit more than 3 applications at a time.

(2) We would like to decrease the maximum length of specification in `POSITION` table up to and including 1500 characters;

(3) We would like to increase the maximum bonus of a position up to 99999999.99 in any currency.

(4) We would like to add an association APPLICANT Is-an-expert-in SKILL to the database. The association Is-expert-in is "one-to-many". It means that an applicant is an expert in at most one skill and a skill may have zero or more experts.

(5) In the future there is no need to store information about the numbers of faxes of the applicants and the fax numbers already entered into the database can be lost.

You can find a lot of information about application of `ALTER TABLE` statement in a presentation 09 SQL - Data Definition Language (DDL) and in Cookbook, How to use data definition and basic data manipulation statements of SQL, Recipe 4.1 How to create and how to alter the relational tables?

When SQL script file `solution1.sql` is ready, connect to MySQL either through command line client mysql or graphical user interface MySQL Workbench and process your script file.

It is recommended to use a script `dbdrop.sql` to drop all relational tables modified during the processing of a script `solution1.sql` and then to re-create the original database with a script `dbcreate.sql`. In such a way your script always operates on the original structures of the sample database.

When processing of a script `solution1.sql` return no errors then connect to MySQL server using command based interface mysql and create a report from processing of SQL script `solution1.sql`. Save your report in a file `solution1.rpt`.

We have already practiced saving a report from processing of SQL script in Laboratory 4. You can also find more information about creating reports from processing of SQL

scripts in Cookbook, Recipe 3.1 How to use “mysql? Command based interface to MySQL database server? Step 4 How to save the results of SQL processing in a file?”

Your report must contain a listing of all SQL statements processed. You can find more information on how to display SQL statements while a script is processed in Cookbook, Recipe 3.1 How to use “mysql? Command based interface to MySQL database server? Step 3 How to process SQL script ?”

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

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.

Task 2 (4 marks)
Your task is to use `INSERT` and/or `DELETE` and/or `UPDATE` statements of SQL to implement a script file `solution2.sql` that performs the following manipulations on the contents of the sample database listed below. You must drop all tables of the sample database, re-create all tables of the database and load data into the database with `dbload.sql` script before implementation of this task.

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

An important condition is that you must only 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.

(1) Insert into the database information about a new skill possessed by an applicant number `7`. The new skill has a name `climbing` and it needs a skill `thinking`. The applicant possesses the new skill at a level `3`.

(2) A position number `1` is no longer required. Remove all information about the position from the database and all information related to the position.

(3) Due to an earthquake all applicants living in `Melbourne` have been evacuated to `Sydney`. Their phone numbers have not changed, however, their fax numbers and email addresses are no longer valid and we do not know the new values. Update the database.

(4) A name of skill `thinking` must be changed to `Deep thinking`. Modify the database.

When ready execute SQL scrip `solution2.sql` and save a report from the processing of the script in a file `solution2.rpt`.

Hint: You can find a lot of applications of database manipulation statements in the Cookbook.

Deliverables
Submit a report 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. The report MUST include ONLY SQL statements and control statements that implement a specification of Task 2 and NO OTHER statements.

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`** and **`solution2.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 (S118)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 a file **`solution2.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