CSIT115/CSIT815 Database Management and Security
Laboratory 8
15 May 2017

Scope

This laboratory includes the tasks related to granting access right to the subsets of relational tables and verifying consistency constraints in the relational tables.

The outcomes of the laboratory work are due by **Saturday, 27 May, 2017, 7.00 pm.**

This laboratory contributes to 2% of the total evaluation in the subject.

A submission procedure is explained at the end of specification.

This laboratory consists of 2 tasks and specification of each task starts from a new page.

It is strongly recommended to solve the problems included in this specification **before coming to a laboratory class** and bring the preliminary solutions to a laboratory class such that any doubts, question, problems, etc can be discussed with a tutor in a laboratory class. Such procedure allows for more effective use of time spent in a supervised laboratory class.

Prologue

Perform the following actions.

Download and unzip a file `laboratory8-all-files.zip`. You should get the files `Laboratory8.pdf`, `dbcreate.sql`, `dbload.sql` and `dbdrop.sql`. Copy the files to your USB drive such that you can access both files either through command line interface mysql or graphical user interface MySQL Workbench. Copy the files to your USB drive such that you can access both files either through command line interface mysql or graphical user interface MySQL Workbench. You can also email a file `laboratory8-all-files.zip` to yourself such that you can access it on different systems. Finally, the simplest solution is to download the file directly to Ubuntu Linux from `http://www.uow.edu.au/~jrg/115/LABORATORIES/LABORATORY8`.

Connect to MySQL either through command line interface mysql or graphical user interface MySQL Workbench and execute script files `dbcreate.sql` and `dbload.sql`. The script files create and load data into a database that contain information about a company and its employees. The company consists of several departments located in the cities all over the world. The database also contains information about the present and past jobs of its employees and about the present managerial structure. A conceptual schema of the database is given below.
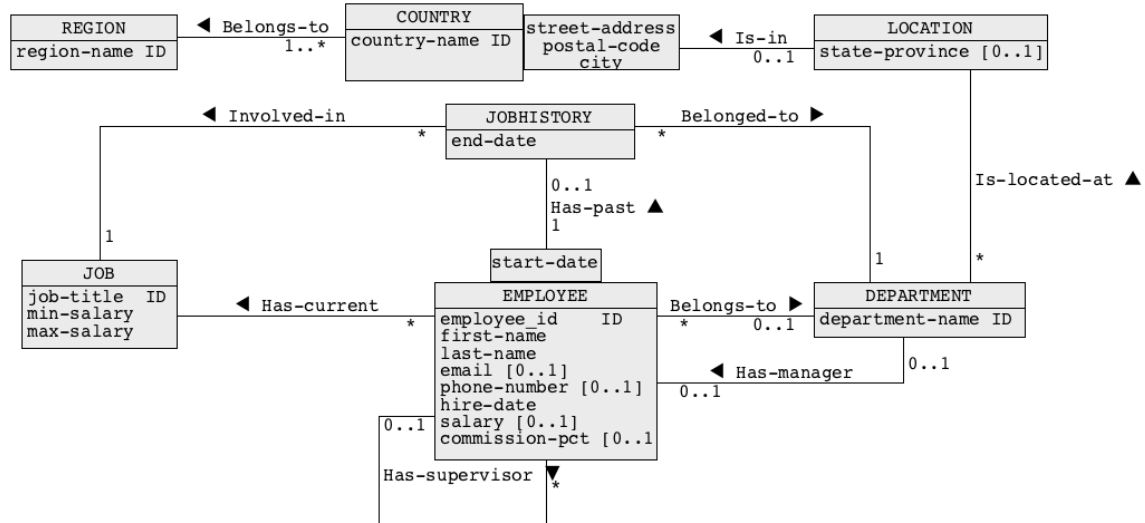
Tasks
Task1 (1 mark)
Remove all relational tables from a database `csit115`. No report is expected from this step.

Execute the commands (or scripts) that perform the following actions.

Login as a user `root` through a command line interface `mysql` and perform the following actions.

(1) Execute a command `tee solution1.rpt`.

(2) Create two database users with the names the same as *a prefix of your University account* concatenated with _1 in a case of the first user and concatenated with _2 in a case of the second user.

(3) Execute the command `notee`.

(4) Execute the command `exit` to logout as a user `root`.

(5) Login as a user `csit115` through command line interface `mysql` and execute command `use csit115`.

(6) Execute SQL scripts `dbcreate.sql` and `dbload.sql` to create and to load data into a sample database.

(7) Execute the command `tee solution1.rpt`.

(8) Create in a database `csit115` a relational view `EMPJOBS` that allows for access to information about employees and total number of finished jobs in the following format.

```
    ENUM  |  NAME           |  EMAIL     | FINISHEDJOBS
   -----------------------------------------------------------
    100   | Steven King     | SKING      | 0
    101   | Neena Kochhar   | NKOCHHAR   | 2
    ...   |  ...            |  ...       | ...
```

(9) Grant a read privilege to all information included a view `EMPJOBS` to a user with the same name as *a prefix of your University email account*_1.

(10) Grant a read privilege to all information included in a view `EMPJOBS` except the column `FINISHEDJOBS` to a user with the same name as *a prefix of your University email account*_2.

(11) Execute the command `notee`.

(12) Execute command `exit` to logout the user `csit115`.

(13) Login the user `root` through command line interface `mysql` and execute a command `tee solution1.rpt`.

(14) Display the read privileges granted to both users. The information should include user name, database name, table name, table privileges and column privileges. You must use data dictionary views included in `mysql` database to list the privileges.

(15) Execute a command `notee`.

Deliverables
Submit a file `solution1.rpt` contains a report from processing of SQL statements that implement the actions listed above. The report MUST have no errors and the report MUST list all SQL statements processed **except** SQL statements included in the scripts `dbcreate.sql` and `dbload.sql`.

A report that contains no listing of executed SQL statements (except SQL statements included in the scripts `dbcreate.sql` and `dbload.sql`) scores no marks and report that contains errors also scores no marks!

The names of users created in Task 1 must be the same as *a prefix of your University account* concatenated with _1 for the first user and _2 for the second user. The different names indicate that your work has been done by another student with all consequences implied by such fact.

Processing of the script on an empty database scores no marks !

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

Task 2 (1 mark)

Refresh the contents of `csit115` database with SQL scripts `dbdrop.sql`, `dbcreate.sql` and `dbload.sql`. No report is expected from this step.

Implement SQL script `solution2.sql` that performs the following actions.

(1) The script uses a database `csit115`.

(2) Next, the script changes a value of a system variable `AUTOCOMMIT` to `'OFF'`.

(3) The script changes the contents of a relational table `EMPLOYEE` by changing a name of a department to `Shipping` for an employee `177`.

(4) The script changes the contents of a relational table `EMPLOYEE` by changing a name of a department to `Executive` for an employee `144`.

(5) Next, the script verifies the following consistency constraint.

A*ll employees that have the same job title must belong to the same department.*

For example: All employees that work as `Stock  Managers` belongs to a department `Shipping`.

If any of the employees work in the other department with the same job title, the script must display the violations of the consistency constraint defined above in the following format.

```
JOB TITLE      |    EMPLOYEE ID   | DEPARTMENT NAME
```

(6) Next, the script reverses the modifications done in the steps (3) and (4) in the simplest possible way.

(7) Finally, the script repeats verification of the same consistency constraint as in a step (5).

Deliverables

Submit 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 !

A report that contains processing errors scores no marks !

A report that contains processing of `CREATE TABLE` and `INSERT` statements of SQL scores no marks !

Processing of the script on an empty database 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 correct files with the correct contents. 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 `CSIT815/CSIT115 (S117) 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 Laboratory 8`
  (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`.
  (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`

A policy regarding late submissions is included in the subject outline.

Only one submission of the outcomes of Laboratory 8 is allowed and only one submission per student is accepted.

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

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.

It is expected that all tasks included within **Laboratory 8** 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 **<u>FAIL</u>** grade being recorded for that assessment task.

The evaluated outcomes of will be electronically returned to the students before 11.55pm on Saturday, 17 June, 2017.

End of specification